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The Influence of Production Accuracy on Suprasegmental Listening Comprehension

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The Influence of Production Accuracy on Suprasegmental Listening Comprehension

by

Adriana C. Romanini

A thesis submitted to the faculty of

Brigham Young University

in partial fulfillment of the requirements for the degree of

Master of Arts

Department of Linguistics and English Language

Brigham Young University

2008

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BRIGHAM YOUNG UNIVERSITY

GRADUATE COMMITTEE APPROVAL

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This thesis has been read by each member of the following graduate committee and by majority vote has been found to be satisfactory.

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ABSTRACT

The Influence of Production Accuracy on Suprasegmental Listening Comprehension

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One of the major questions in second language (L2) phonological learning is whether perception precedes (and therefore guides) production. This question is important for knowing what types of training most benefit L2 learners. While most theories assume that perception always precedes production (e.g., Best, 1995; Flege, 1995), several recent studies have found that production may precede perception (e.g., Baker & Trofimovich, 2006; Beach, Brunham, & Kitamura, 2001; Goto, 1971; Sheldon & Strange, 1982; Underbakke, 1993), demonstrating that this complex relationship may differ depending on how and when the L2 is learned. The current study seeks to further explore this relationship by examining how perception and production influence each other on the suprasegmental (i.e., primary word stress) level. While many studies have examined whether perceptual training can influence production accuracy of suprasegmentals, little to no research has examined whether the opposite is true.

Thus the goal of this study was to examine whether ESL learners who were trained in suprasegmental pronunciation accuracy improved in listening and speaking more than similar students who were trained in perception accuracy. Comparisons of pre- and post-tests suggest that focusing on accurate production improves not only

production accuracy, but also listening comprehension more than does training in listening comprehension. These results enlighten our understanding of how perception and production influence each other, and may underscore the importance of providing bottom-up pronunciation skills for improving L2 phonological learning.

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CHAPTER ONE

Introduction

Statement of the Problem

Both in EFL (English as a Foreign Language) as well as in ESL (English as a Second Language) settings, many undergraduate and graduate students have to read texts in English in their areas of study. In an EFL context, students are often acquainted with the technical vocabulary involved and can usually understand the texts well. However, many of them do not have a chance to speak or listen to academic English and therefore quite often they do not know what sounds to associate with some of the words. This can also happen to ESL students, as academic vocabulary is not necessarily present in everyday conversations. As a result, some of these students could be associating the sounds of their first language (L1) with the English words in the text, thus mispronouncing many of them.

After having read a word several times with the wrong sounds associated with it, this mispronunciation may be stabilized and might have an impact both on the students' spoken fluency and their listening ability. When a student produces one of these words in a conversation, the interlocutor may not understand the message. Similarly when the student is listening to someone talk, he or she may fail to recognize this word.

One of the difficulties in pronunciation that many ESL/EFL learners have is the accurate perception and production of word stress. Mistakes involving primary word stress are a common problem among ESL/EFL learners and have a great impact on

students' pronunciation intelligibility and their perception skills (Avery & Ehrlich, 1992; Celce-Murcia et al., 1996; Hahn, 2004; Nation, 2001; Zielinski, 2008).

Most of the time this failure to understand the message leads to increased anxiety associated with activities which involve listening, such as English language exams or tests, video-conferences, conference talks, telephone calls, and academic or professional meetings. As Murphy (1991) points out, "lecture-centered teaching in mainstream classrooms requires that ESL college students function effectively as listeners from the very beginning of their academic careers" (p.55). Thus, learning appropriate English word stress is an important part of learning to speak and listen accurately.

It was not until very recently that researchers began to actively investigate listening, and even though it is now regarded as an important skill in second language (L2) acquisition, it is still neglected in the classroom and by many published books (Morley, 2001).

Many course books and English teaching professionals try to address the problem of listening by working with the entirety of a listening passage, training the students to first pay attention to the whole meaning of the passage (listening for gist) and then focusing on the details the interlocutor is trying to convey (Morley, 2001; Otte, 2006; Peterson, 2001). In other words, typically listening skills lessons focus on top-down strategies. Top-down processing is the use of background knowledge or situational context to understand a text. But some students do not seem to profit much from instruction that solely focuses on top-down strategies as their listening comprehension apparently does not improve as expected (Morley, 2001; Otte, 2006; Peterson, 2001; Tsui & Fullilove, 1998). They succeed in answering exam-type questions, but fail to

understand what is being said in more realistic listening contexts, such as listening and understanding college lectures (Ferris & Tagg, 1996). One thing that might be missing is a focus on bottom-up skills, or the recognition of sounds, words and their meanings that provide clues to understand the message (Morley, 2001; Rost, 2002; Ur, 1984). If students miss key words necessary to understand the context, working solely on top-down processes is not going to help.

Pronunciation lessons may provide a solution for students who are struggling with listening (perception) due to a deficiency in their bottom-up skills, i.e., recognizing key words necessary to understand the context (Peterson, 2001). Sadly, many ESL/EFL teachers skip pronunciation practice in their classes, either because they have not been trained how to teach this skill and therefore feel uncomfortable teaching it (Breitkreutz et al., 2002; Burgess and Spencer, 2000; Derwing et al., 2006; MacDonald, 2002), or because they think that pronunciation practice is too time consuming and they do not have time to address it in class (Celce-Murcia et al., 1996; Gilbert, 1994; Morley, 1994).

Perhaps a solution for this dilemma would be showing teachers and course designers that pronunciation (production) training benefits students not only with production, but it also fosters better perception by providing them with bottom-up skills.

Purpose of this Study

In view of the problem stated above, this study sought to investigate the relationship between perception and production on the suprasegmental level by training L2 high-intermediate students in perception or production of primary word stress and verifying the effects the training had on perception and production of the same structures, in order to determine which kind of training most benefits L2 learners.

Most perception and production theories assume that perception must necessarily precede production (e.g., Best, 1995; Flege, 1995, Flege, Bohn, & Jang, 1997; Rochet, 1995; Wode 1996). However, recent studies show that perception does not have to occur in order for production to take place, in fact, production can precede perception (e.g., Baker & Trofimovich, 2006; Beach, Brunham, & Kitamura, 2001; Goto, 1971; Sheldon & Strange, 1982; Underbakke, 1993). Type of training or instruction, L1 background, and level of instruction are some of the factors that make this relationship more complex (Cardoso, in press).

While most of these studies have examined whether perceptual training can influence production accuracy, little to no research has examined whether production training can influence perception, which is why the current study may contribute to the field of L2 perception and production.

Research Questions

The present study attempts to address this gap in the literature by answering the following research questions:

1. Does training ESL learners in perception or training them in production best help them to more accurately produce word stress (in both individual words and sentences)?
2. Does training in perception or training in production best help learners to more accurately perceive word stress (in both individual words and sentences)?
3. What is the relationship between learners' perception and production?

Three intact groups of high-intermediate ESL students participated in this study: a perception-trained group, a production-trained group, and a third group, which served as

control. The subjects were pre and posttested in both perception and production, and the results analyzed.

Chapter two reviews the literature on listening, pronunciation, perception, and production, necessary to understand the problem addressed in this study. Chapter three offers a detailed description of the study, including the subjects, the tests used in the experiment, the stimuli, and the training sessions. Chapter four describes the results from the data collection, and chapter five presents the results of the study, a discussion of these results and their pedagogical implications, the limitations of the study, and suggestions for further research.

CHAPTER TWO

Review of the Literature

In chapter one the need for training second language (L2) students in word primary stress was described. Such training is necessary to provide them with bottom-up skills that will aid in better accuracy on listening tasks. The purpose of this chapter is to provide a theoretical basis to support the idea that training L2 students in production of word primary stress not only helps them to produce word primary stress more accurately, but it also helps them to more accurately perceive word primary stress.

Listening and Pronunciation

The literature on English as a Second or Foreign Language (ESL/EFL) listening and pronunciation is extensive, and several studies can be found that determine how one skill may affect the other (e.g. Murphy, 1991; Otte, 2006). Yet, often these skills are considered to be neglected both by teachers and language pedagogy researchers (e.g., Elliott, 1997; Morley, 1994; Morley, 2001; Otte, 2006; Rost, 2002), as described below.

Listening

Listening (i.e., perception) is considered to play a major part in L2 acquisition, but this has not always been the case. It was not until about 25 years ago, particularly since the 1990's, that researchers started paying more attention to listening, and since then articles and books on this skill have increased (Morley, 2001; Murphy, 1991; Otte, 2006; Rost, 2002). However, this skill is still overlooked by many published courses and in many classrooms around the world (Morley, 2001; Rost, 2002). Besides this problem, Morley (2001) points out that many published materials focus too much on either top-

down or bottom-up mode of language processing. At a recent TESOL Conference (2007) authors Blackwell and Naber mentioned that current ESL/EFL textbooks and listening strategies books focus too much on top-down processing in listening and more attention should be given to bottom-up processes in order to help L2 learners of English to improve listening comprehension. Top-down processing is the use of background knowledge or situational context to understand a text, it is the listener's "semantic expectations and generalizations" (Rost, 2002) about a text. It is an important strategy for L2 learners to understand the meaning of a text and to make sense of the words and phrases they do not recognize or do not know, and as such, teachers should emphasize this strategy in order to help students cope with listening (Morley, 2001; Peterson, 2001; Rost, 2002).

One should not, however, disregard the teaching of bottom-up processing, or the recognition of sounds, words and their meanings that provide clues to understand the message (Morley, 2001; Rost, 2002; Ur, 1984). Blackwell and Naber (2007) pointed out that students who do not have good knowledge of vocabulary and cannot perceive the sounds of key words struggle to improve their listening skills. While nobody can deny that "it is inefficient and unnecessary to use only the 'bottom-up' cues that sound provides in order to make judgements about the significance of sounds that a speaker produces" (Rost, 1990, p.34), working on bottom-up skills, which may include pronunciation training, may strengthen ESL/EFL students' listening comprehension by helping them perceive key words necessary to understanding the listening text. Hieke (1987) suggested that L1 listeners do not perceive individual words, but "syllables and the segments that make them up" (p. 127) and observed that more research was needed to

know how L2 learners perceive a listening text. Some of the studies that investigate L2 learners' perception and show the importance of bottom-up processing in L2 listening are Vanderplank (1993) and Tsui & Fullilove (1998). Vanderplank (1993) asked advanced-level L2 learners to transcribe an interview with Margaret Thatcher and found that the difficulties the students had in understanding the interview were due to the proportion of stressed words and the tempo at which they were spoken. In a study analyzing the performance of L2 learners on listening test items in public examinations in Hong Kong for seven years, Tsui & Fullilove (1998) found that "less-skilled L2 listeners are weak in bottom-up processing" and therefore need to guess from the context to compensate for that limitation. These studies show how bottom-up skills cannot be ignored in listening instruction.

Rost (1990) published a taxonomy with listening sub-skills teachers should give attention to when planning their listening classes. In this taxonomy, bottom-up and top-down skills are addressed in order to help L2 learners to develop their listening skills. Peterson (2001) presents a list of top-down and bottom-up skills (pp. 93-98) that should be given attention to at each level of instruction. One of the bottom-up processing goals described for every level of instruction, from beginning-level listeners to advanced-level listeners, is "recognizing syllable patterns, number of syllables, and word stress" (p.93). For this reason, the current study focuses on this bottom-up skill: the perception and production of English word stress.

Pronunciation

Pronunciation (i.e., production) is unarguably an important component of EFL/ESL teaching and an essential part of learning a word. However, time constraints or lack of teacher training on pronunciation teaching techniques often cause this skill to be neglected in the classroom (Breitkreutz et al., 2002; Burgess & Spencer, 2000; (Celce-Murcia et al., 1996; Derwing & Munro, 2006; Gilbert, 1994; MacDonald, 2002; Morley, 1994) One factor that may have contributed to this scenario is the way pronunciation was approached before the changes promoted by the communicative theories (Elliott, 1997), and the belief that pronunciation was “a component of linguistic rather than communicative competence” and therefore time spent on pronunciation drills was regarded as wasted (Pennington & Richards, 1986, p. 207). But pronunciation is more than minimal pairs and meaningless drills (Celce-Murcia et al., 1996; Morley, 1994).

While the effects of not working with pronunciation are more evident for accurate L2 production, it is possible that it also affects accurate L2 perception. For most authors and researchers, the assumption is that perception precedes production, therefore accurate listening should precede accurate pronunciation. However, recent research (i.e., Bradlow & Pisoni, 1998; Smith, 2001; Baker & Trofimovich, 2006) has called into question this assumption, demonstrating that in L2 learning, production may actually precede perception. If this is correct, training students in production may in fact help them with perception, because this training would help them develop their bottom up skills, necessary to perceive the message.

Perception and Production in Second Language Speech

Similar to the research on L2 listening and pronunciation skills, much has been published on L2 perception and production and there has been a growing interest in this field in the past several years. However, the fact that these processes have been investigated independently and the lack of studies investigating how they influence each other have led to much debate (Fowler, 1996; Fowler and Galantucci, 2005; Hirata, 2000). Therefore the relationship between L2 speech perception and production is still not understood (Rochet, 1995). More evidence showing how L2 speech production and perception influence each other is needed if we want to understand which strategies can better help L2 learners become more accurate in their L2 perception and production skills.

Despite the controversies, it is possible to identify three main theories about the relationship between these two skills:

- (a) perception and production develop simultaneously, and may or may not be linked,
- (b) perception precedes and is necessary for production, and
- (c) production may precede perception.

In the next sections of this chapter these three different points of view will be explored.

Perception and Production Developing Simultaneously

Motor theorists (Liberman et al. 1967; Liberman and Mattingly, 1985, 1989) and direct-realist approach advocates (Fowler, 1986; Joiner, 2000) believe that perception and production develop simultaneously and are connected.

Motor theorists believe that the objects of speech perception are the articulations of the sounds as well as the neuromotor commands the brain sends to the muscles in order to articulate those sounds, also called intended gestures, and not sounds, or abstract phonemes (Lieberman, 1998; Liberman et al., 1967; Liberman & Mattingly, 1985; Liberman & Mattingly, 1989). This theory also hypothesizes that speech perception is different from the perception of other sounds and human beings are specialized to perceive intended speech gestures (the lengthening of a vowel, or the tongue rolling back, for instance), in what they consider part of the “larger specialization for language” (Lieberman, 1998, p. 120). In their view, therefore, speech is perceived by the same processes involved in production and they even have “common and specific neural loci” (Lieberman, 1998; Liberman & Mattingly, 1989).

The Direct Realist Theory of speech perception was proposed by Carol Fowler. According to this theory, the objects of speech perception are the articulation of sounds, or the movements performed by the vocal tract (Fowler, 1986; Fowler, 1996; Joiner, 2000). However, differently from the motor theory, Fowler (1996) proposes that speech is not perceived by intended gestures, but that these gestures “are the public actions of the vocal tract that cause structure in acoustic speech signals,” and such acoustic speech signals are then recovered by the listener (p. 1731).

Relatively few studies, if any, have empirically tested the direct realist and motor theories. One attempt is Hirata (2000) who tested the belief that perception and production are “interwoven” and that research considering both skills simultaneously would be beneficial (p. 136). She carried out a study involving three experiments with L2 learners of Japanese and noted that when learners did not produce duration and pitch and

make phonemic distinctions in their own speech, this resulted in misperception, or failure to perceive these phonemic distinctions, in native speakers' speech. The results from all three experiments, nevertheless, indicate no strict correspondence between the development of perception and production due to large individual variation.

Other authors, in particular the advocates of the General Approach (Diehl & Kluender, 1989; Diehl, Lotto & Holt, 2004; Stevens and Blumstein, 1981), find the relationship between perception and production to be more tenuous or more autonomous. They believe that either production follows perception when there is "a need for auditory distinctiveness of phonemes to shape production," (Diehl, Lotto & Holt, 2004, p. 167) or perception follows production, when listeners "perceive the acoustic consequences of gestures" (Diehl, Lotto & Holt, 2004, p. 167).

Regardless of these findings, there are several weaknesses to these theories. Empirical studies proving that L1 or L2 learners perceive gestures or intended gestures and not sounds are lacking. For example, Ohala (1996) states that no definitive proof has been given to support the motor and the direct realist theories and that their claims are implausible, because they have failed to produce "an algorithm for deriving the articulations which produce any given speech signal" (p. 1719). However, Ohala's counterarguments are "also based on plausibility and commonsense" (p. 1719) and he relies on his revision of phonetic and phonological evidence and some analogies to support his attack to these theories. According to him, "listeners are able to differentiate the elements of speech on the basis of their sound" (p. 1723) rather than the "retrieving the articulatory activity which produced the heard speech" (p. 1718).

Perception precedes Production

Most speech perception researchers, especially those examining L2 speech perception and production (e.g., Flege, 1995; Flege et al., 1997; Rochet, 1995; Wode 1996) advocate that perception and production are linked and that problems in speech production are due to failure in perception.

Studies showing that training in perception lead to better perception and better production abound. Akahane-Yamada et al. (1996), Best, Studdert-Kennedy, Manuel, & Rubin-Spitz (1989), Best, McRoberts & Goodell (2001), Best & Strange (1992), Borden, Gerber & Milsark (1984), Bradlow, Pisoni, Akahane-Yamada, & Tohkura (1997), and Rochet (1995) trained subjects in perception of segmentals and the results showed that in addition to improvement in perception, production was also improved. Several of these studies and the results of these studies are described below.

Rochet (1995) reported a study he conducted with 10 native speakers of Standard French, 10 speakers of Canadian English, and 10 speakers of Brazilian Portuguese which consisted of an imitation task in which English and Portuguese speakers had to repeat a list of French monosyllables (production), and a perceptual task in which English and Portuguese speakers had to identify vowel sounds in French monosyllables. The stimuli were Standard French recordings of monosyllables containing the vowels [i], [y], [u], and [a] in different consonantal contexts. The results suggest that the subjects' failure in pronouncing the L2 sounds correctly may be due to a failure in perception. Moreover, he found that the subjects perceived L2 sounds by using their L1 phonological systems, which led him to believe that this is what learners do when they are beginning to learn a new language (p. 385). Cardoso (in press) also found that the level of proficiency of L2

learners affects the relationship of perception and production. He studied the perception and production of English word-final codas in Brazilian Portuguese EFL learners across three proficiency levels by data collection and analysis. The results of his study show that perception preceded production in most cases, and that the more proficient the learner is, the better they can perceive English consonants. The results of these studies suggest that perceptual training may not be the best choice for beginning L2 learners. If they rely on their L1 phonological systems (Rochet, 1995), that would explain their failure in perceiving L2 sounds. More advanced students have had greater opportunity to produce the language, and that may have helped them with perception, hence the results obtained by Cardoso (in press).

Even though studies have demonstrated that perception training improves production training in general, similar studies have demonstrated that this may not be the case for all L2 learners. For example, Bradlow et al. (1997) trained Japanese speakers in /r/-/l/ perceptual identification and measured how training affected perception and production. They found that there was substantial individual variation across subjects in perception and production, both at pretest and posttest and in the percentage of gains from pretest to posttest, but the improvement in perception and production was not correlated — in other words, they found that “the two processes proceeded at different rates within individual subjects” (p. 2307). The results of this study show that there was transfer of knowledge from perceptual training to production, but students made greater gains in perception than in production. It is important to notice that perception training did not help perception and production gains to be aligned. Individual variation could be

attributed to different levels of proficiency, or to the fact that different individuals need different forms of training.

What may cause perception and production to be linked? In a similar study, Borden, Gerber, & Milsark (1984) attempted to answer this question by training Korean adults learning English to identify the /r/-/l/ contrast in English, but they also added training in production. They tested /r/ and /l/ production, discrimination, identification and self-perception, and concluded that self-perception may be necessary for accurate production, which supports that production training is necessary, for self-perception cannot occur in the absence of production. In other words, training in production may in fact provide a method to link perception skills with production skills.

In summary, several studies have claimed that perception must precede production, but this theory does not hold true when problems such as individual variation (e.g., Bradlow et al., 1997), stages of learning (Cardoso, in press; Rochet, 1995), and L1 background (Rochet, 1995) are taken into account. In some cases, perception training did not necessarily help with production. Bradlow et al., (1997) mentioned that there was great individual variation and that there was no correlation between perception and production results. More advanced students may have an advantage over beginners in perceiving L2 sounds, perhaps because they produce the language better. If beginners indeed use their L1 phonological system to try and perceive L2 (Rochet, 1995), depending on their L1 background, they will not perceive certain L2 structures that do not exist in their repertoire (Flege, 1995). This may indicate that production training would help these students to perceive these structures they lack in their L1 phonological system. Borden, Gerber & Milsark (1984) suggest that self-perception may have helped

L2 students to produce more accurately. If they are correct, production training is necessary for more accurate perception.

Production precedes Perception

As the results from studies for the theories described so far show, individual variability plays an important role in perception and production, and in some cases, production may precede perception. This theory has not been empirically tested, although several researchers (Goto, 1971; Beach, Brunham, & Kitamura, 2001; Sheldon & Strange, 1982; Underbakke, 1993) have suggested its plausibility. This assumption is of great interest for the present study, because most of the studies carried out in L2 learning examine the effects of perception training in both perception and production, but studies training in both perception and production and the effects they have on both perceptual and production skills are not as common (Hirata, 2000).

The plausibility of this theory is supported to some degree by the findings of earlier studies. In fact, many researchers (Baker & Trofimovich, 2006; Catford & Pisoni, 1970; Goto, 1971; Sheldon & Strange, 1982; Underbakke, 1993), in conducting studies about the acquisition of the English /r/ and /l/ by Japanese students, found that learners' production accuracy actually outstripped their perception accuracy. In one of these studies, Underbakke (1993) trained 39 Japanese speaking subjects to listen to pairs of stimuli to identify the distinction of /r/-/l/ in synthetic speech perception and natural speech perception. Training involved nine sessions of 20 minutes each, the tasks were discriminatory, and they had to decide whether the initial sound was the same or different. They were pre and posttested in perception and production. The treatment group improved more than the control and they did better at identifying the difference

when listening to synthetic speech than listening to natural speech. All six subjects who achieved more than 98% on producing the distinction /l/-/r/ achieved 82% in perception, which shows that students “can learn to produce what cannot be heard” (Underbakke, 1993, p. 87).

One of the ways in which production training may help perception is that when an L2 learner is trying to pronounce a new word, they go through a stage in which they have to exaggerate the sounds of the new word. Beach, Brunham, & Kitamura (2001) carried out a study with Greek/Australian English bilingual speakers perceiving unfamiliar speech contrasts in Thai in order to investigate if their speech production had any relationship to their speech perception. They found that “bilinguals who exaggerate the voicing differences between sounds when speaking, best perceive these differences when listening” (p. 232). They note that “some people are more sensitive or attentive to phonetic features either in perception or production, and that this sensitivity generalizes from one to the other” (p. 232). According to Beach, Brunham, & Kitamura (2001), learners’ perceptual ability is related to the way they produce the L2, which reinforces the theory that production training can help L2 learners have more accurate perception.

Summing up, upon reviewing the major studies from different theories on the relationship between perception and production in L2 acquisition, Llisterri (1995) identified the following trends:

- Stage in the acquisition of L2, experience with the language, degree of exposure, and age of acquisition seem to play a major role in the interaction between production and perception in L2.

- Similarity between L1 and L2 sounds might also have an effect on the interplay between production and perception.

Production seems to precede perception in more advanced L2 learners, as some studies demonstrated (Cardoso, in press; Goto, 1971; Underbakke, 1993), so Listeri is right in pointing out that experience with language and degree of exposure play an important part in the relationship of these processes. In these cases, L2 learners' ability to produce may help them to perceive more accurately. L1 background affects beginning L2 learners, maybe because they try to perceive L2 sounds by using their L1 phonological system (Rochet, 1991). Social pressure to improve production could lead learners to practice pronunciation more, and that might also lead to increased perception. Catford & Pisoni (1970) trained two groups of students with "exotic" segmentals, one in perception and one in production, and found that the production trained group had better results in perception and production when compared to the perception trained group. All these findings seem to lead to the conclusion that production training may be the most helpful way to help L2 learners to have more accurate production and perception, and that is what this study tried to find out.

The present study attempted to test the relationship between perception and production by verifying which training, perception or production, helped students to produce and perceive word primary stress more accurately. Whereas most studies focus on training students to perceive sounds and how this can help them with production, in this study we trained a group of students to perceive word stress, and a group to produce word stress, using the same stimulus, two- and three-syllable words from the Academic

Word List (AWL), to determine what effects each kind of training had on both their perception and production skills.

Training

The easiest way to observe the relationship between perception and production is by pretesting subjects, training them in perception and production and analyzing which effects each form of training has on perception and production accuracy as indicated by their posttests results. In this section training sessions used in some of the studies mentioned above will be detailed in order to identify some of the elements which a good training session should have.

Training Sessions Structure

As the effects of the training sessions on perception and production are the basis for making sound claims, the way they are planned, the stimulus, the number of sessions, and how they are conducted is extremely important for any study testing that relationship. Understanding how training sessions have been done so far is important to establish what gap there is in the literature that the present study might fill. The following studies are examples of training sessions commonly seen in studies of this nature.

Borden, Gerber & Milsark (1984) point out that adult ESL students are resistant to long term changes in speech patterns, and they do not retain much after the training is over. Their study was done on the English phonemic contrast /l/ - /r/, and they had four training sessions of 45 minutes each. They concluded that changing habits takes time and, therefore, more sessions would be necessary to help students retain what they learned. With 45 perceptual training sessions on phonemic contrast /l/ - /r/ over a period of three

to four weeks, Bradlow et. al. (1997) were able to observe greater changes from pre to posttests.

Both Borden, Gerber & Milsark (1984) and Bradlow et. al. (1997) used computer stimuli in their training sessions. Hirata (2000) designed three experiments for her research with L2 students of Japanese in order to observe what effects perceptual training has on perception and production. The stimuli consisted of natural tokens of minimal pair contrasts in words in isolation and the same words in carrier sentences, recorded by five different native speakers of Japanese. This added strength to the training sessions. Not only were the tokens more realistic, but they also presented greater variability. Subjects in this study were submitted to 10 perceptual training sessions of about 15 minutes each, over four weeks. The training sessions consisted of listening to words and sentences and answering a two-alternative forced-choice identification task. The computer program gave the subjects instant feedback. The perception posttest was similar to the training, but production posttests involved repeating words after hearing them spoken by the examiner.

All these studies, however, were carried out in laboratories. Studies testing the relationship of perception and production carried out in an ESL/EFL classroom with intact groups are rare. Akita (2007) worked with three groups of Japanese students of English in classroom setting and trained one in perception and production of segmentals, another group in suprasegmentals, and used a third group as control. The treatment consisted of 12 sessions of 90 minutes each, over a period of four months. They used identical teaching materials with all groups, but one group had emphasis on suprasegmentals, another group worked with segmentals (minimal pairs) and a third

group was used as control. The perception training consisted of listening passages from the textbook used in class. Production training involved dialogue practice focusing either on segmentals or suprasegmentals depending on the treatment group. The strength of this study is the number of training sessions and the fact that it was carried out in the classroom. However, the fact that the stimuli in each group is different makes it difficult to compare the results and make strong claims.

With the exception of Akita's study, most of the studies involving training were done in segmentals thus requiring long and numerous training sessions in order to yield results in the posttest. They were also done in language laboratories, and therefore it is not possible to try to adapt them to the classroom environment. Akita's study was carried out in the classroom; however the stimuli across groups was not the same, and so the results are difficult to assess and quantify. Besides, most of the trainings described above (Borden, Gerber & Milsark, 1984; Bradlow, 1997; Hirata, 2000) involved a small number of subjects from similar language backgrounds and ages, studying at a university.

Summing up, most previous research has involved training sessions carried out in language laboratories, and the stimulus was often segmentals, recordings of minimal pair phonemic substitutions by native speakers, or computer generated tokens. Studies done in a classroom setting are scarce, as Akita (2007) points out. There may be several reasons to explain why such studies are not conducted in ESL/EFL classrooms, such as the lack of time to include training sessions and tests in the curriculum, the difficulty in training teachers to obtain reliable results, or obtaining consent to conduct research. But successful studies conducted in ESL/EFL classrooms yielding positive results are needed

if one wants to see how teaching pronunciation in the classroom is both possible and valuable.

Another aspect to consider is that there is a lack of studies showing training in perception and production using the same stimulus and measuring its effects in perception and production accuracy. Moreover, studies training students in production are rare, as Trofimovich and Gatbonton (2006) point out, and experiments with production training influencing production and perception are needed in order to better understand the relationship between these two skills.

The training sessions for this study were carefully planned bearing in mind all these principles.

Stimulus –Primary Word Stress

As the former section indicates, another important aspect of training sessions is the stimulus. Most studies done in perception and production focused on segmentals (Beach, Brunham, & Kitamura, 2001; Borden, Gerber & Milsark, 1984; Bradlow et al., 1997; Goto, 1971; Sheldon and Strange, 1982; Underbakke, 1993), but with the advent of communicative English teaching, many authors have agreed that misunderstandings involving suprasegmentals are of a more serious nature than those involving segmentals (Avery & Ehrlich, 1992; Celce-Murcia et al., 1996; Gilbert, 1994; Hahn, 2004; Morley, 1991; Morley, 1994). These authors describe the effects that training students in suprasegmental pronunciation have on their production and how these students are perceived by native speakers. Moreover, training them on suprasegmental pronunciation may also help them perceive these same L2 features better (Taylor, 1981; Zielinski, 2008).

Word primary stress, in particular, is of the utmost importance. Mastering word stress is a fundamental part of knowing a word and it also contributes to sentence rhythm (Avery & Ehrlich, 1992; Celce-Murcia et al., 1996; Nation, 2001). Furthermore, word primary stress in English conveys new information to the listener (Celce-Murcia et al., 1996; Hahn, 2004; Zielinski, 2008).

Many studies show how word stress is difficult for nonnative speakers of English because of first language interference (de Bot, 1986; Hahn, 2004; Murphy & Kandil, 2004; Pennington & Ellis, 2000; Watanabe, 1988; Zielinski, 2008). In addition, inaccurate word stress affects the intelligibility of the overall message (Hahn, 2004, Zielinski, 2008). In fact, English speakers rely heavily on primary stress in order to understand what the nonnative speakers were trying to convey (Hahn, 2004, Zielinski, 2008). Failure to stress correct syllables seriously affects the message. Despite the nonnative speakers' difficulty in producing correct stress, previous studies have shown that stress patterns can be learned (Hahn, 2004). Unfortunately, no studies have examined what impact the production of English word stress has on perception.

Working with word primary stress in the classroom is also more manageable than many teachers or course designers would think. Murphy and Kandil (2004) examined Coxhead's Academic Word List (AWL) and showed that most of the headwords follow similar word stress patterns (as will be explained in chapter 3), which proves that working with those patterns in the classroom is possible and can benefit students, especially those who are preparing to study in an English speaking university, or those working as Teaching Assistants (TAs).

If on the one hand researchers and teachers alike agree on the importance of language learners mastering word stress, on the other hand few dare to include pronunciation exercises that involve repetition because this kind of practice is not regarded as meaningful communication, and therefore there is no room for such drills in a communicative classroom (Elliott, 1997; Morley, 1994). Nevertheless, some authors point out that repeated L2 phonological information is beneficial to students, especially to those who are beginners (e.g., Guzmán, 1992; Trofimovich & Gatbonton, 2006).

Summing up, most of the studies involving training in perception or production used segmentals as stimulus, most often minimal pair phonological contrasts, and training students in segmentals takes a long time to show results. Training students in suprasegmentals takes less time, and it can be more effective, as changes can be noticed after just a few sessions. That makes this kind of training more manageable for classroom purposes (Avery & Ehrlich, 1992; Celce-Murcia et al., 1996; Morley, 1991; Morley, 1994). Repetition of structures is another component of successful training, since students benefit from repeated phonological information.

Conclusion

Most of the experiments involving perception and production of ESL/EFL discussed in this chapter were done with segmentals in a language laboratory, outside classroom settings. Subjects were mostly trained in perception and the effects of this training on perception and production were measured. To our knowledge, no studies have been conducted in which subjects were trained both in perception and production of suprasegmentals and which measured the effects of both training types on perception and

production skills, with training sessions that involved the same stimuli and with pre and posttests that reflected the training.

In the present study, a group of subjects was trained in perception of primary word stress, another group was trained in production of primary word stress, and a final group acted as a control. Training sessions were done in the classroom, with the same stimuli for both the perception and production trained group. The effects training had on both the subjects' perception and production of word primary stress were measured. The words selected for this study were taken from Coxhead's AWL because of their relevance to the students who are preparing to study in American universities. The following research questions guided this study:

1. Does training ESL learners in perception or training them in production best help them to more accurately produce word stress (in both individual words and sentences)?
2. Does training in perception or training them in production best help learners to more accurately perceive word stress (in both individual words and sentences)?
3. What is the relationship between learners' perception and production?

CHAPTER THREE

Methodology

Introduction

The current study seeks to examine how second language (L2) perception and production influence each other on the suprasegmental (i.e., primary word stress) level. The literature review showed that while many studies have examined whether perceptual training can influence production accuracy of suprasegmentals, little to no research has examined whether the opposite is true.

In this chapter the research design will be presented in detail. First a description of the subjects is provided, followed by an overview of the study design, including the instrument, a detailed account on the selection of the stimuli used in the study, the treatment with a description of the training sessions and the lesson plans prepared for these sessions, and a brief overview of the data analysis.

Subjects

The subjects were level four (higher-intermediate) ESL students in three intact classes from the English Language Center (ELC) at Brigham Young University, residing in Utah, where the study was conducted.

Subjects were divided into three groups: those who were trained in perception (perception-trained), those trained in production (production-trained), and a control group (control) that received no training, but had regular pronunciation practice as part of the listening/speaking curriculum. All groups had approximately the same number of students (perception-trained – 16; production-trained – 17; control – 16) with 49 students

in total. Seven subjects were disqualified for not having participated in either the pretest or the posttest, bringing the total number of subjects down to 42 (perception trained – 13; production trained – 15; control – 14).

Subjects' length of residence in the United States varied from 1 to 12 months (standard deviation = 4.7) and the amount of time spent studying English in their home countries previous to their arrival in the United States varied from 1 to 14 years (standard deviation = 3.24). There were 22 males and 20 females who participated in both the pretest and posttest for both perception and production. The average age of the students was 25.3 (standard deviation = 6.6).

All three groups were similar as far as first language background and age were concerned. Each group had students whose first language was French, Japanese, Korean, Mandarin, Mongolian, Portuguese, Spanish, and Thai. In addition, the control group had one Arabic speaker. See Table 3.1 for a complete description of the research groups.

Table 3.1

Summary of the Characteristics of the Subjects

group	N	gender		Age	Length of Residence	English background
		F	M			
Perception	13	6	7	23.5 (17 – 47)	1 – 12 months	1 – 8 years
Production	15	8	7	25.7 (18 – 41)	1 - 12 months	1 – 12 years
Control	14	7	7	26.6 (19 – 41)	1 – 12 months	1 – 14 years
L1 – Arabic, French, Japanese, Korean, Mandarin, Mongolian, Portuguese, Spanish, Thai.						

Design Overview

A pretest/posttest design with intact groups was selected for this study. The dependent variable was the score difference ($X_2 - X_1$) between the pre and posttests, i.e., the language gain as measured by the production and perception of the target structures. The independent variable was the treatment: perception-trained, production-trained, and no treatment for the control group.

Stimuli

Many of the students at the ELC are studying English in preparation to take standardized English tests and to study at an American university. Mastering academic vocabulary is vital for these students. Having this in mind, the words selected for the pre and posttests were taken from the headwords found in the Academic Word List (AWL), as made available at <http://language.massey.ac.nz/staff/awl/headwords.shtml> by Coxhead (2000). One support for the decision to use the AWL words comes from Murphy and Kandil (2004) who examined Coxhead's AWL and organized a table showing that most words follow similar word stress patterns and suggested that teachers and curriculum planners should take advantage of that list when training English for Academic Purposes intermediate to advanced students.

In order for the study to measure language gains, a list of words that were unfamiliar to the students was needed. Therefore, prior to selecting the words for the study, a list of 358 two- and three-syllable AWL headwords was piloted on 12 high-intermediate ESL students who did not participate in the final study. These students were asked to mark the stressed syllable and then rate each word on the list according to the following scale:

1. I have never seen this word before, and I don't know what it means.
2. I think I have seen this word, but I don't know what it means.
3. I have seen this word before, but I don't know what it means.
4. I have seen this word before, and I think I know what it means.
5. I have seen this word before, I know what it means, but I don't use it often.
6. I have seen this word before, I know what it means, and I use it regularly.

Words for this study were selected among the ones rated between one and four, because these are the words that the students do not use in their daily speech (i.e., only words that were not familiar or were only slightly familiar to the students were chosen for inclusion in this study). Besides the words that were not familiar to the students, words for which 50% or fewer of the students were able to accurately describe the stress were also included in the study. In addition, for 25% of these words, the students were unable to provide an accurate pronunciation of segments, further suggesting that these words were unknown to the students. Based on these criteria, out of the 358 words, 90 words fulfilled the requirements to be used in the study.

The words for both the production and perception tasks needed to be as similar as possible. Therefore, these pre and posttest words were matched for part of speech, number of syllables, and frequency. To make these matches, two and three-syllable verbs, nouns, and adjectives from the list of words piloted above were selected. For each of these words, the frequency in academic registers was determined by consulting the British National Corpus web interface made available by Dr. Mark Davies (BYU), found at <http://corpus.byu.edu/bnc>. At the time of this study there was no frequency data available for American texts, and this is the reason why a British corpus was used. High

frequency ratings (> 1,000 words per million) were distinguished from low frequency ratings (< 1,000 words per million). These values were chosen by perusing the overall frequency counts in the academic word list and determining that this would be an appropriate place to divide the words to allow for a large difference between high and low frequency words.

To determine the stress of the words used in the study, each word was divided into syllables and the stressed syllable was noted. The Cambridge Advanced Learner's Dictionary (2003) and the Free Dictionary at <http://www.thefreedictionary.com/> were used to determine the primary stress for each word.

Eighty words for the pre and posttest were randomly selected. Half of these words were assigned for the production test and half for the perception test. Ten of the words from the tests were used in the training sessions. The tests were piloted with high-intermediate students who would not be participating in the actual study, and four words which more than 80% of these students scored with 90% and above accuracy were discarded and replaced by other words from the 90 word set that fulfilled the requirements for the study. As there were no three-syllable words that fit the requirements to replace the discarded words, two-syllable words were chosen to replace them. However, this did not upset the balance of high versus low frequency of the stimuli. A distribution of the words according to frequency and number of syllables can be seen in Table 3.2.

Table 3.2:

Words Used in Pre and Posttests

		Perception		Production	
		High frequency	Low frequency	High frequency	Low frequency
Isolated words	2 syllables	conflict consent debate expert sequence*	contact decade* discrete injure regime	constant input* maintain purchase sequence* volume	commence construct converse decade* injure regime
	3 syllables	analyze contribute indicate potential relevant	concentrate integral interval mediate protocol*	contribute illustrate internal subsequent	definite integral mediate protocol*
Words embedded in sentences	2 syllables	acquire impact* notion occur technique	colleague edit* insight* project* transfer	aspect concept context income issue success	alter conduct contrast edit* finance* insight*
	3 syllables	apparent benefit criteria estimate register	adjacent attribute generate* terminate ultimate	accurate criteria similar specific	generate* implement mutual specify

* = word also used in training

*Instrument**Overview*

The primary instruments used in this study were a pre-test and a post-test used to verify the participants' knowledge of word-stress patterns of two- and three-syllable words used in the study. The tests had two parts: to test perception, a paper-and-pencil

listening test was conducted, and to test production a speaking test was conducted. The paper-and-pencil perception test was taken in class and took approximately 15 minutes. The production test was taken in the computer lab, and lasted for about 15 minutes including instructions, recording the words and sentences and saving the file correctly. Each of these tests will be discussed in more detail below.

Perception Test

The perception test (See Appendices A and B) had two sections: in the first, the target words were presented in isolation while in the second section the words were presented in sentences. This was done so we could see whether the sentence environment would affect students' perception or production of English word stress. The goal of the first section was to determine which of two presented words was pronounced with the correct stress. Twenty two- and three-syllable words were recorded twice by a native speaker, once with the correct stress and once with incorrect stress. Whether or not the first or second word presented contained the correct stress pattern was randomly selected. Students listened to these 20 pairs of target words, which were repeated twice, and then selected the alternative "a" or "b" that corresponded to the correct version of the word.

An example of the instructions for the first part of the test is presented below:
"You will hear 20 words, pronounced in two different ways each. For each word, decide which pronunciation is correct: the first one (alternative "a") or the second one (alternative "b"). **Circle the letter corresponding to the correct version of the word.**
You will hear each pair twice.

e.g.: a b **or** a b."

The following is an example item. Students hear the recording, “PERception, perCEption,” and they see the following:

1. perception a b

They are expected to circle alternative “b.”

Section two required students to listen to 20 items in which two- and three-syllable words were embedded in short semantically correct sentences. Twenty sentences carrying the target two- and three-syllable words were recorded by a native speaker. Each sentence was recorded twice, and students had to mark all the stressed syllables of the words in each sentence. They did not know which was the target word in the sentence.

The instructions were as follows:

“You will hear 20 sentences. For each sentence, mark **all** the stressed syllables, with a dot on top of the stressed syllable. E.g.: John is a doctor. You will hear each sentence twice.”

One of the sentences the students listened to was “We have a lot more ideas to generate.”

Although students marked the stress for all the words, only the word of interest (in the example sentence above “generate”) was marked as being correct or incorrect.

Production Test

The production test (See Appendices C and D) also had two sections, the first of which had the subjects produce the words in isolation and the second in carrier sentences. Both the first and second sections test a student’s ability to produce stressed syllables in two and three-syllable words correctly. Students were handed out a paper test containing 20 two- and three-syllable words in isolation and 20 semantically correct sentences containing two and three-syllable target words. They recorded the words on computers at

the ELC Computer lab using Audacity, a freeware recording software. In the first section, students were requested to record each of the 20 words twice.

The instructions for the first part of the test read as follows: *“Please record each of these words twice, leaving a short pause between repetitions.”* For example, students had the word “capable” printed in the test. They had to record it twice.

In the second section, students had to record 20 short semantically correct sentences. The instructions were as follows: *“Please record each of the following sentences twice, leaving a short pause between repetitions.”* For example, the sentence “Think about the problem from every aspect” was printed in the test, and students had to record this sentence twice.

Training Sessions

Eight 15-20-minute training sessions were planned as treatment (see Appendices E through J for all lesson plans used in the training sessions). Both the perception-trained and the production-trained groups received these treatments, although they differed from each other in whether the emphasis was on perception or production (as explained below). The focus of the training sessions was to teach students a method for learning English stress pattern rules for verbs, nouns and adjectives, so students could transfer these rules to the AWL headwords and to determine whether training them in production or in perception was the most effective means of teaching them stress patterns.

Some useful pronunciation books are currently used by teachers worldwide such as *Well said* (Grant, 1993), *Sound advantage* (Hagen & Grogan, 1992), *Sounds great* (Beisbier, 1994), *Sounds & rhythm: A modern pronunciation course* (Sheeler & Markley, 1991), *Focus on pronunciation* (Lane, 2005), or *Sound concepts* (Reed & Michaud,

2005). These books focus on both segmentals and suprasegmentals, and many of these books present comprehensive word stress rules. However, these textbooks were not used because they are complete pronunciation courses; there would be a need to use them consistently throughout a course, which would not fit the time frame for this study.

The rules chosen for this study were based on the decision trees proposed by Kreidler (2004). Kreidler simplified the rules for word stress in American English by organizing them into groups depending on whether the ultimate syllable is stressable or not, as explained below. Due to the limited time for treatment, Kreidler's decision trees seemed to be the most practical way to help the students understand that there are rules governing word stress in American English.

The training consisted of presenting the rules, explaining them and trying them on a few example words so that later the students could apply them to a list of words. After they decided where to place the stress, the perception group listened to the teacher say the words with the correct stress whereas the production group saw the words with the stressed syllable clearly marked and they had to say them out loud as prompted by the teacher. These sessions are described in more detail below.

In the first session (See Appendices E and D), the teacher initially checked whether students were familiar with the concept of syllables and then taught them the difference between antepenultimate (antepenult), penultimate (penult), and ultimate (ult) syllables as shown in Figure 3.1. This was done so the students would understand the Kreidler's decision trees.

MO	NO	PO	LIZE
-	antepenult	penult	ult

Figure 3.1: Syllabic Division

Students were then told that there are rules that can help them locate the stress of a word, and the following sessions would help them to do so.

Following this introduction, the teacher handed the students the decision tree for verbs (Figure 3.3) and a chart with examples of tense vowels (Figure 3.2), necessary for working with the decision tree. Tense vowels occur in stressed open syllables, as shown in Figure 3.2.

9 TENSE / FREE VOWELS:			
	FRONT	BACK	
HIGH	tree /i:/	brew /u:/	
MID	day /ei/	toe /ou/	
LOW	spa /a:/	law /ɔ:/	
	tie /ai/	toy /oi/	now /au/

Figure 3.2: Tense Vowels (based on Kreidler, 2004, p. 50)

The teacher asked students to read the example words in the tense vowels chart aloud to verify if they knew the sounds. It was also explained that there are lax and r-colored vowels in English, but they only needed to focus on the tense vowels in order to work with the decision trees.

The first step in using the decision tree for verbs is to look at the last syllable of a given verb and know whether or not it is ‘stressable.’ The ultimate syllable (ult) is stressable if it contains a tense (called by Kreidler ‘free’) vowel, represented by “V:”, or a

the students were asked how many syllables it had, to which they replied “two.”

According to the decision tree, the stress should be placed on the ult when the ult is stressable and the verb contains only two syllables. The same thing was done with the verb “contain,” which has the ult stressed because it contains a tense vowel.

The last example words were “exaggerate” and “supplement.” The ult in these words are stressable (V: and VCC respectively) and because they contain more than two syllables, the stress should be placed on the antepenult.

The students were given a set of ten verbs to practice in class. They were asked to use the decision tree to locate the stress of these words. After five minutes, the teacher checked their work.

The perception group had to hear the teacher read the words (twice each) and check their work. The teacher exaggerated the stressed syllable to help the students identify it. The teacher showed them an overhead transparency with the words and the stressed syllables clearly marked. The teacher showed the production group which syllable was stressed by writing the word on the board and placing a dot over the stressed syllable, and asked them to say the word and repeat it twice. The production group had to say each word twice, exaggerating the stress. The teacher helped the production group by correcting the pronunciation of vowels or consonant sounds as needed, but did not correct the stress verbally. Rather, the teacher wrote the word on the board, went through the rules and marked the stressed syllable and asked students to say the word with the correct stress. The list of verbs can be found in Appendices E and F.

On the second day of training, the teacher quickly went over the decision tree again, and gave the students another set of ten verbs (see Appendices E and F) and they

had five minutes to work out which syllable was stressed. The same procedure used on the first day of training was used on the second day. The perception group listened to the words and checked whether they had marked the correct stressed syllable, and the production group saw the words written on the board with the stressed syllable marked and they had to repeat the words three times.

On the third training day, the students were given a decision tree for nouns (See Appendices G and H). The training for nouns also took two days, and the training sessions were similar to those for verbs. A similar procedure was followed for the adjectives training sessions (See Appendices I and J). In total, there were 8 training sessions. Two for verbs, two for nouns, two for Type I adjectives (those that follow the rules for verbs and nouns), and two for Type II adjectives (those that end in *-al*, *-ar*, *-ent*, *-ant*, and *-ous*).

During the training sessions, the perception group was instructed not to repeat the words out loud, so as to make sure the different treatments could be measured. The production group did not hear the words being pronounced by the teacher. The teacher showed where the stress was and they were prompted to say them out loud. This was also, in effect, perception, in the sense that these students could hear themselves, but they were never corrected by hearing the words spoken by the teacher.

The results from the tests were entered onto Excel spreadsheets. The perception results were just transferred to the spreadsheets. Correct answers were assigned a value one (1) whereas incorrect answers were assigned a value of zero (0). The production tests were analyzed by a native speaker who also assigned one (1) to words correctly stressed

and zero (0) to words that had incorrect stress. These procedures and the statistical analyses used to analyze the data are better described in the next chapter of this study.

CHAPTER FOUR

Results

This study was designed to examine how perception and production influence each other on the suprasegmental (word stress) level. Three groups of high-intermediate ESL students participated in this study. One-third of the participants were trained to accurately perceive word stress while another third of the participants were trained to accurately produce word stress, both on isolated words and words embedded in semantically correct sentences. The last third served as a control group.

The following research questions will guide the organization of this chapter:

1. Does training ESL learners in perception or training them in production best help them to more accurately produce word stress (in both individual words and sentences)?
2. Does training in perception or training them in production best help learners to more accurately perceive word stress (in both individual words and sentences)?
3. What is the relationship between learners' perception and production?

The methods for analyzing the collected data, as well as the statistical analyses used and the results of the study will be given below for each of the three research questions.

Question 1: Does training ESL learners in perception or training them in production best help them to more accurately produce word stress (in both individual words and sentences)?

The first research question of this study was whether training ESL learners in perception or production helps them to more accurately produce word stress in both

individual words and sentences. All three groups (perception-trained, production-trained, control) were pretested and posttested and the results for the production pre and posttests were calculated. A native speaker of American English trained in phonetics and ESL teaching listened to the words and sentences in order to determine whether the correct syllable was stressed. This rater was not told which speakers were in which group, nor whether the words presented were from the pre or post test. Deciding whether a word was correctly stressed or not was sometimes difficult because participants often stressed both syllables, stressed the syllable but did not reduce the vowel on the unstressed syllables, or did not stress either syllable. Because of these difficulties, an item was considered correctly stressed (1) if the stress syllable was longer, louder and/or more intense (higher in pitch) than the other syllables, (2) regardless of whether or not the other syllables contained reduced or full vowels. A token was not considered correctly stressed if both syllables contained equal stress. For all tokens, only the participants' first iteration of the word was judged, because it was considered that the first response was instinctive, and demonstrated that the subject internalized the rules. Each correct answer was given a "1" and each incorrect answer was given a "0." The correct responses were then tallied and the result was divided by the total possible number of responses in order to obtain a percentage correct for each participant. In other words, the total correct responses for each subject were calculated.

The results of the analysis from production of isolated words and words in embedded sentences will be reported below.

Words

As Figure 4.1 demonstrates, it appears that both the perception trained and the production trained groups improved at least in part from pretest to posttest in accurate production of word stress for isolated words (perception trained pretest: 47 %, posttest: 51%; production trained group pretest: 51%, posttest: 61%), but that the control group were less accurate from pretest to posttest (control pretest 54%, posttest 45%). In addition, the production trained group appears to have improved more than the perception group.

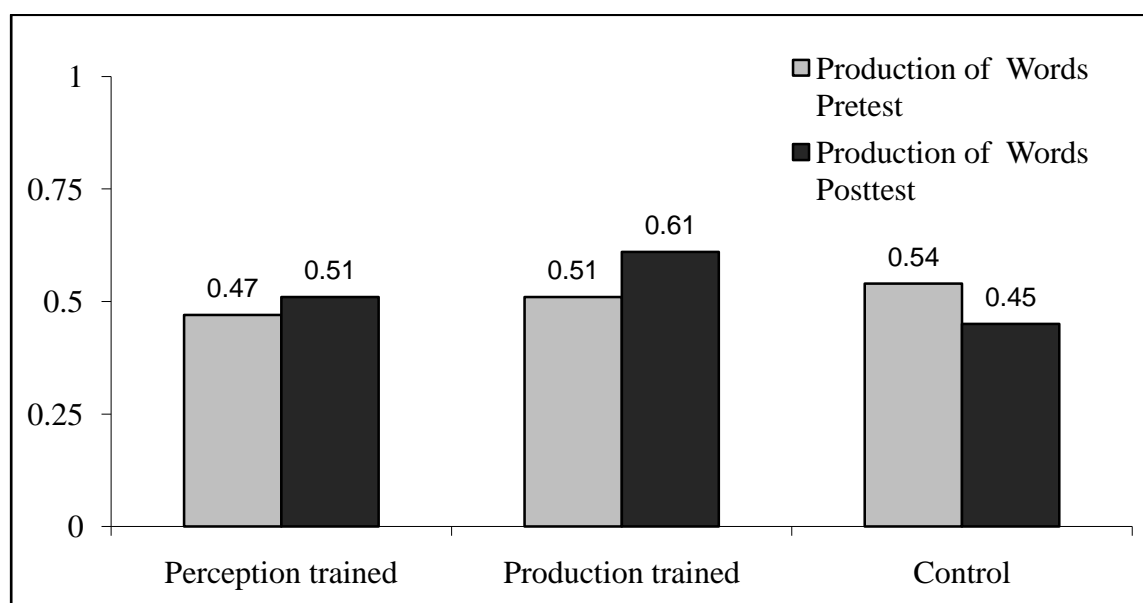


Figure 4.1: Production of Individual Words

Sentences

Next were examined the differences from pretest to posttest for word stress accuracy in embedded sentences. As Figure 4.2 demonstrates, both the perception trained and the production trained groups improved at least in part from pretest to posttest

(perception trained pretest 55%, posttest: 62%; production trained group pretest: 59%, posttest: 77%), but that the control group were less accurate from pretest to posttest (control pretest 64%, posttest 57%). In addition, the production trained group appears to have improved more than the perception group.

To determine whether these differences between the three groups reached a level of statistical significance for both the isolated word and embedded sentence conditions, a two-way repeated measures ANOVA was run on the data with the percentage of correct responses as the dependent variable and group (production-trained, perception-trained, control) as between and condition (isolated words, embedded sentences) as within subjects factors. The results of this analysis revealed a significant effect of group ($F(2,41) = 23.811, p = .0001$), but no significant effect of condition ($F(1,1) = 2.499, p = .119$) and no group x condition interaction ($F(2,1) = .622, p = .540$). Further post hoc tukey tests revealed that only the production group improved from pretest to posttest in both the isolated word and sentence conditions.

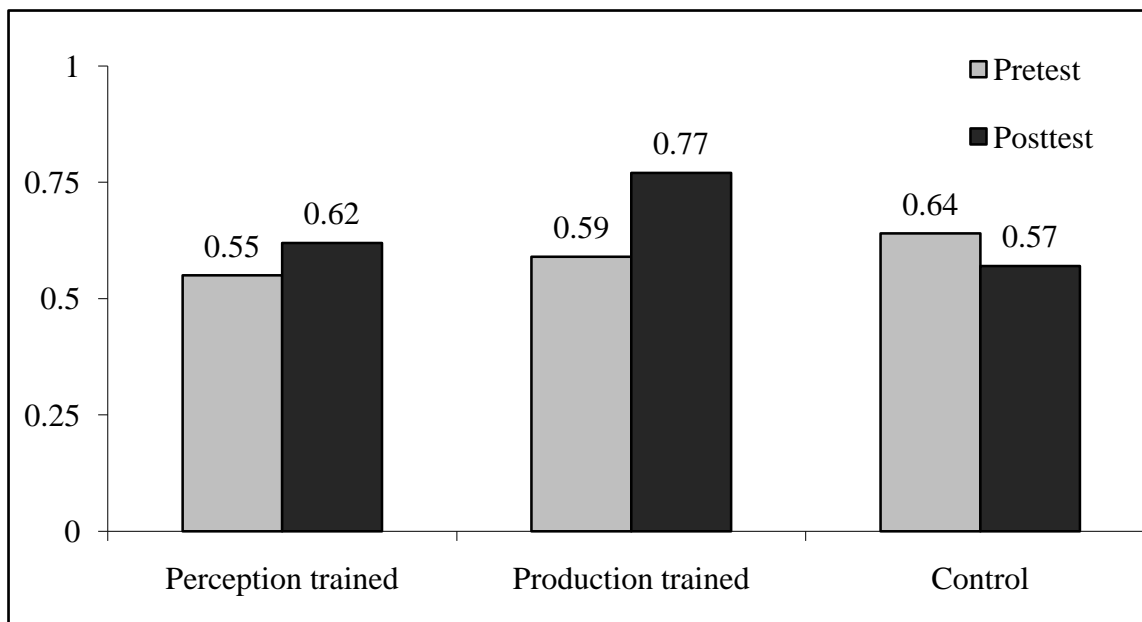


Figure 4.2: Production of Sentences

The first question was whether training ESL learners in perception or production helps them to more accurately produce word stress in both individual words and sentences. The results show that training the students in word stress production was the most effective treatment to help them produce word stress more accurately in both isolated words and words embedded in sentences.

Question 2: Does training in perception or training them in production best help learners to more accurately perceive word stress (in both individual words and sentences)?

The second question was whether training in perception or production helps learners to more accurately perceive word stress in both individual words and words embedded in sentences. The three groups of students were pre and posttested and the results for the perception pre and posttests were calculated. Each correct answer was given one point, and each incorrect answer zero points. In the first part of the test the students had to choose from two alternatives, a or b, so interpreting the results from this section did not present difficulties. In the second part of the test, the students had to mark every stressed syllable in a sentence. The researcher was only concerned about the target word of the sentence. If the stress was correctly marked on the target word, a participant received one point and zero points for incorrect answers, including when the stress was marked incorrectly or was not marked at all. The points were then added and the results were divided by the number of total possible points to obtain a percentage. The results of the analysis from perception of isolated words and words in embedded sentences will be reported below.

Words

As Figure 4.3 demonstrates, both the perception trained and the production trained groups had significant difference between pretest and posttest in accurate perception of word stress for isolated words (perception trained pretest 61 %, posttest: 62%; production trained group pretest: 62%, posttest: 70%), but the control group did not show improvement from pretest to posttest (control pretest 69%, posttest 66%). In addition, the production trained group appears to have improved more than the perception group.

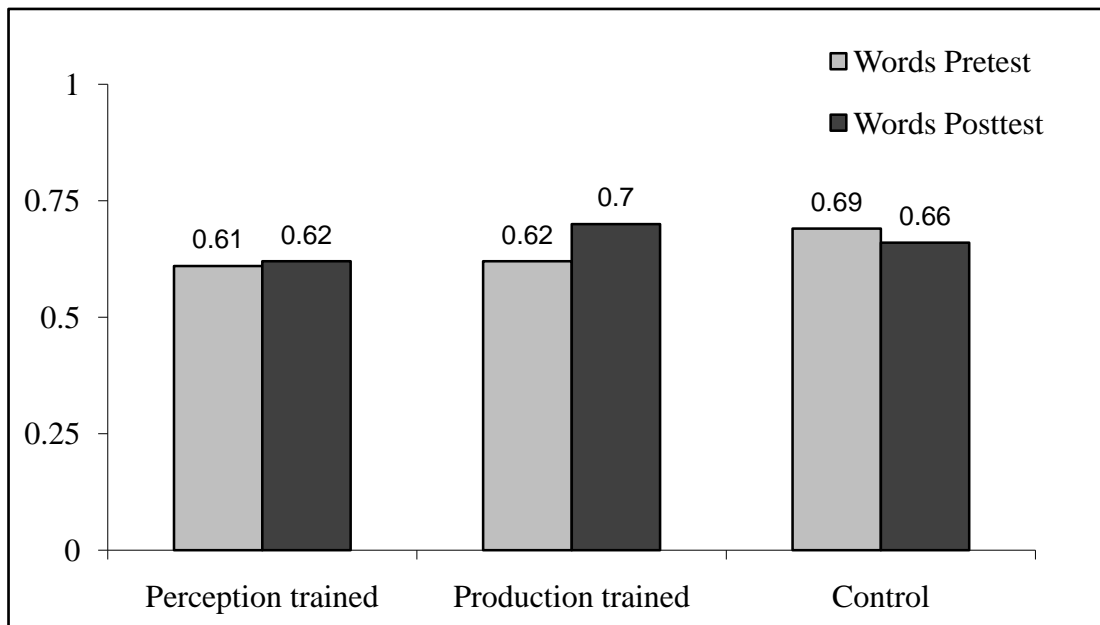


Figure 4.3: Perception of Individual Words.

Sentences

Next were examined the differences from the perception pretest to posttest for word stress accuracy in embedded sentences. As Figure 4.4 demonstrates, only the production trained group appears to have improved from pretest to posttest (production trained pretest 48 %, posttest: 63%). The perception trained group and the control group

were less accurate from pretest to posttest (perception trained group pretest: 59%, posttest: 49%; control pretest 65%, posttest 40%).

To determine whether these differences between the three groups reached a level of statistical significance for both the isolated word and embedded sentence conditions, a two-way repeated measures ANOVA was run on the data with the percentage of correct responses as the dependent variable and group (production-trained, perception-trained, control) as between and condition (isolated words, embedded sentences) as within subjects factors. The results of this analysis revealed a significant effect of group ($F(2,41) = 7.52, p = .0001$), test type ($F(1,1) = 15.618, p = .0001$) and a group x test type interaction ($F(2,1) = 4.576, p = .013$). Further post hoc tukey tests revealed that the production group improved from pretest to posttest for both the word and sentences conditions, while the perception group only improved in the perception of words in isolation.

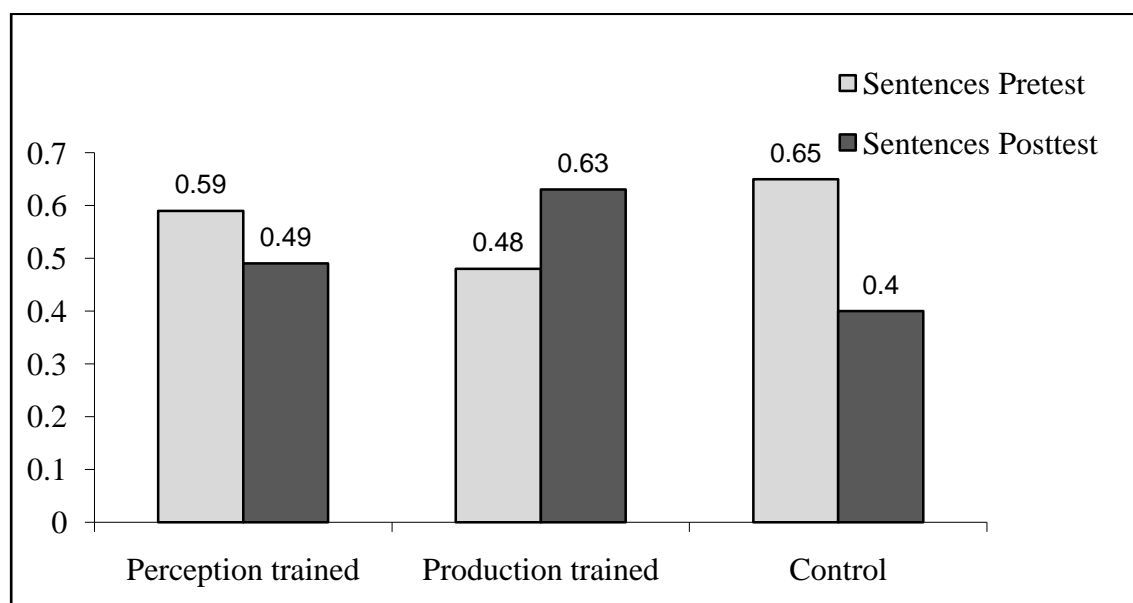


Figure 4.4: Perception of Sentences.

The second question was whether training ESL learners in perception or production helps them to more accurately perceive word stress in both individual words and words embedded in sentences. The results show that training the students in word stress production was the most effective treatment to help them perceive word stress more accurately in both isolated words and words embedded in sentences.

In summary, the production trained group had greater gains in the production of words in isolation and words embedded in sentences, and the perception of words in isolation. The perception trained group made small gains in the production of words embedded in sentences and the perception of words in isolation, although only the perception of words in isolation reached statistical significance. The control group did not have any statistically significant difference between pre and posttest.

Question 3: What is the relationship between learners' perception and production?

The third question of this study was to determine whether different types of training influenced the relationship between perception and production. Because production training, in effect, is training in both production and perception (since listeners are trained to hear their own accurate productions of the sounds), it was hypothesized that the link between perception and production would be greater for the production trained than for the other two groups. In order to analyze the relationship between learners' perception and production, a correlation was run within the three tested groups, perception trained, production trained, and control, before and after the treatment.

To run the correlation, the perception and production scores for the isolated words and embedded sentence conditions were combined for each participant. Thus, each participant had two scores: the combined percentage correct score for isolated words and

embedded sentences for perception and a similar score for production. When examining each of the groups separately, it was found that perception and production were very weakly correlated before treatment (see Figure 4.5). The R Sq Linear for the perception trained group was 0.238, the R Sq Linear for the production trained group was 0.027 and the R Sq Linear for the control group was 0.015. The perception trained group did not change much from pretest to posttest, which indicates that the treatment did not help them align the two skills. The production trained group, however, notably improved their results from pre to posttest, indicating that the treatment was effective for both perception and production. (see Figure 4.6).

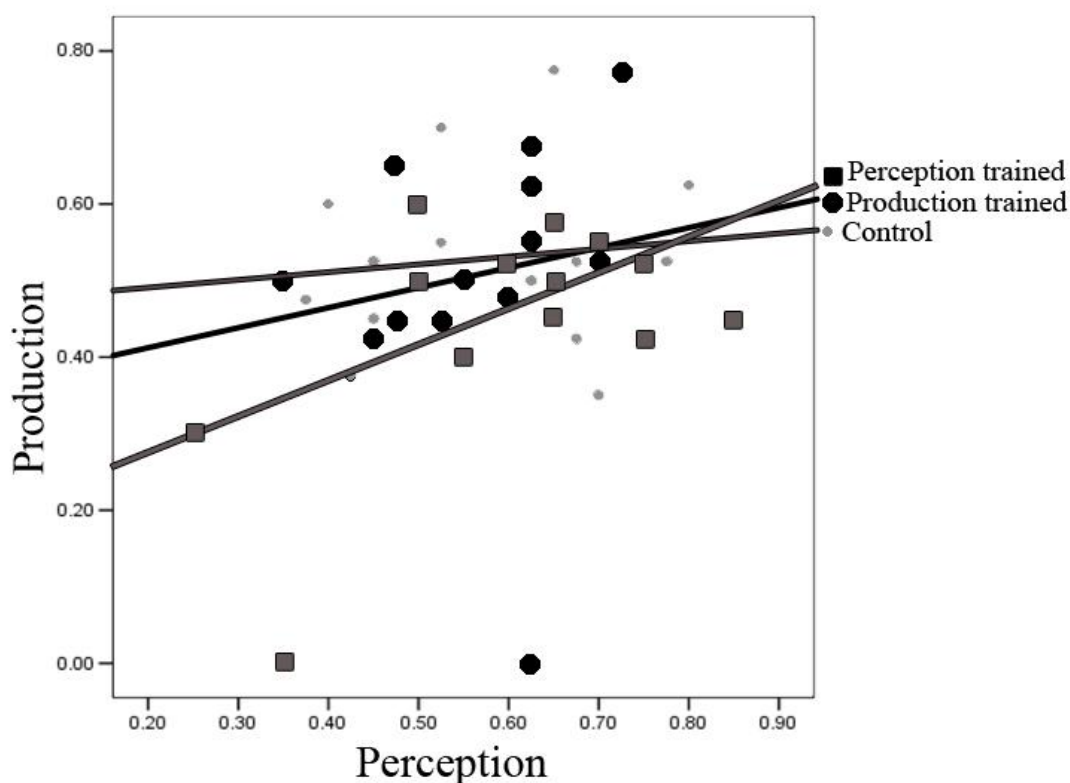


Figure 4.5: Correlations between Perception and Production at Pretest

Training the students in production helped them to relate production and perception, as it can be seen in Figure 4.6. The correlation for the production trained

group was $R_{\text{Sq Linear}} = 0.463$ in the posttest, proving that when one is good at production, one is also good at perception. Training in perception did not help the students to align both skills, $R_{\text{Sq Linear}} = 0.228$, which indicates that training helped a little, but not as much as in the production trained group. The control group did not show any correlation between perception and production at posttest ($R_{\text{Sq Linear}} = 0.046$).

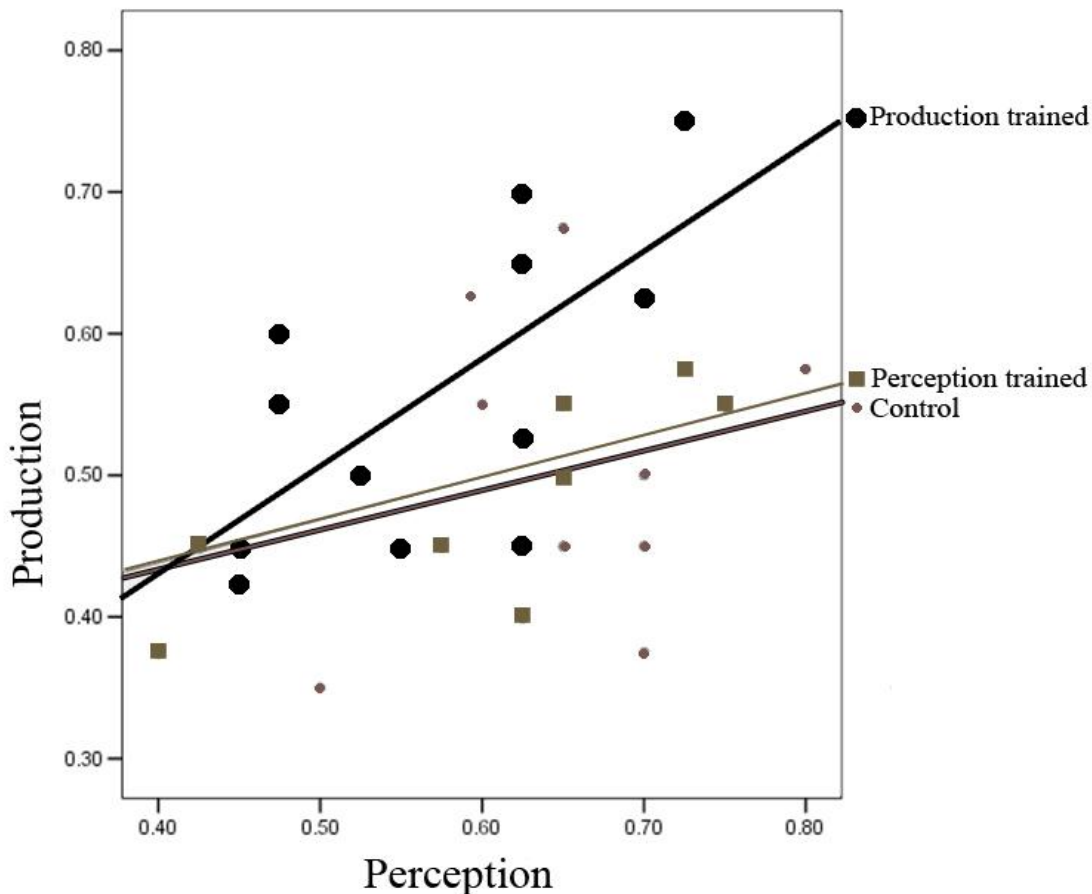


Figure 4.6: Correlations between Perception and Production at Posttest

Conclusion

This study has yielded exciting results. Whereas both the perception and the production trained group showed an improvement in perception and production accuracy when compared to the control group, the production trained group had the most

significant results. Not only did the production trained group score higher in production and perception, but they also had a better alignment in both skills as it can be seen in Figure 4.7. The implications of these results will be discussed in chapter 5.

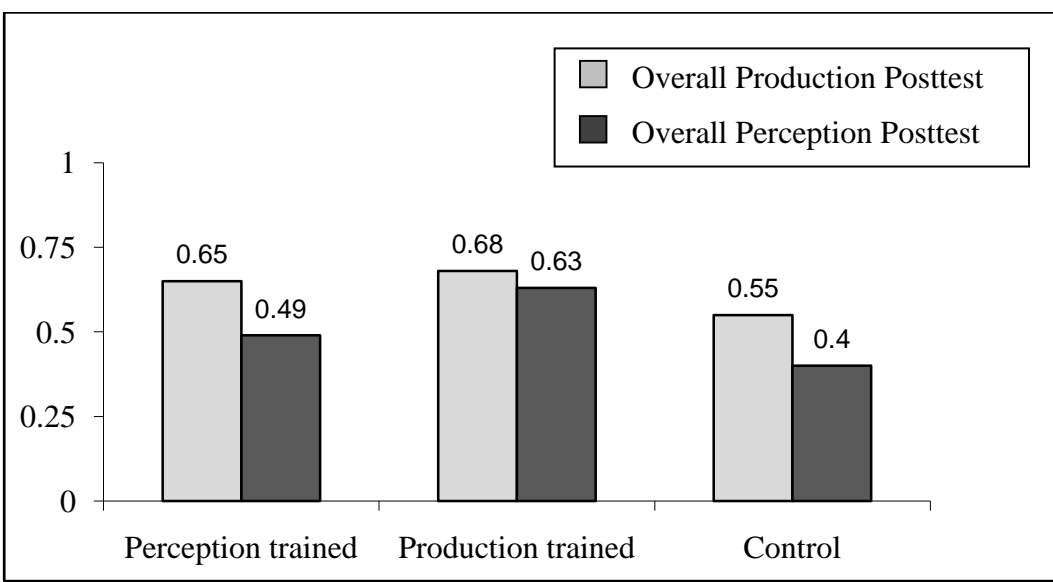


Figure 4.7: Relationship of Perception and Production by Group

CHAPTER FIVE

Introduction

The purpose of this chapter is to discuss how the results described in chapter four answer the research questions of this study. This will be followed by sections discussing some pedagogical implications, the limitations of this study and finally, a section offering suggestions for further research.

Discussion of Results

Question 1: Does training ESL learners in perception or training them in production best help them to more accurately produce word stress (in both individual words and sentences)?

The first question was whether training ESL learners in perception or production helps them to more accurately produce word stress. As expected, both the perception and production trained groups showed better results in production accuracy in both individual words and sentences when compared to the control group, but only the production group had significant improvement. One might expect that production training is the most effective way to foster more accurate production. However, the production trained students were not exposed to perceptual training in this study, so this finding challenges the theory that problems in speech production are necessarily due to failure in perception (e.g., Flege, 1995; Flege et al., 1997; Rochet, 1995; Wode 1996), because according to the researchers that posit this theory, perception necessarily precedes production.

One factor that may have contributed to the success of production training is self-perception. Listening to yourself accurately produce a structure certainly helps you to produce this structure better but it might also help you to perceive this structure more accurately (Baker & Trofimovich, 2006; Borden, Gerber & Milsark, 1984). The ability to perceive one's own production may be more important than perceiving someone else's production. Perhaps this ability helped the production-trained group to have a better alignment of both perception and production accuracy results. Ultimately, the production-trained group in fact trained in production and perception, for they had to "hear" and pay attention to their own production. Baker and Trofimovich (2006) suggest that self-perception may be linked to "individual differences in learners' phonological short-term memory capacity" and learner's ability to "store and learn phonological representations of words" (p. 247). This ability is related to the "phonological loop," described by Baddeley, Gathercole, & Papagno (1998) as a mechanism to "store unfamiliar sound patterns while more permanent memory records are being constructed" (p. 105).

Another factor that contributed to the success of the production trained group was the explicit articulatory training they received (i.e., students were asked to exaggerate the stressed syllables). Underbakke (1993) confirmed that students who receive explicit articulatory training "learn to produce what cannot be heard" (p. 87). Perhaps this factor might be intimately connected with self-perception. By exaggerating the sounds, the students are paying attention to the pitch, duration of the sound, articulatory points, the muscles involved in the process, and they also end up hearing themselves. This self-awareness process might help them discover "nuances" that might help them perceive the

same structures in native speakers' productions, and they might use that to "calibrate" their production, thus improving it (Baker & Trofimovich, 2006).

It is important to notice that even with a small number of training sessions, participants were able to show significant improvement in their production accuracy. Seeing that the perception group had fewer gains, it might be that if they had more training sessions they might have made greater gains. This means that training students in production of primary word stress is more effective than training them in perception if the goal is to increase students production accuracy in a shorter period of time. One of the issues behind teachers' avoidance of pronunciation practice in the classroom is the time constraint (Celce-Murcia et. al., 1996; Morley, 1994). But the results show that if they choose activities that involve production, they will achieve their goals with fewer training sessions.

Question 2: Does training in perception or production help learners to more accurately perceive word stress (in both individual words and sentences)?

The second question was whether training ESL learners in perception or production helps them to more accurately perceive word stress in both individual words and words embedded in sentences. Again the results show that training the students in word stress production was the most effective treatment to help them perceive word stress more accurately in both isolated words and words embedded in sentences, which may come as a surprise to many, and might disprove the claims that perception must precede production (e.g., Flege, 1995; Flege et al., 1997; Rochet, 1995; Wode 1996).

Whereas one might have expected the production trained group to *produce* English word stress better if compared to the perception trained one, finding that

production training of primary word stress also helped students to *perceive* the same structures more accurately than those students trained in perception was surprising.

Several factors may have contributed to the success of production training. As mentioned in the answer to question one, training in production is also training in perception, because students can hear themselves (self-perception). Another aspect of the training, as mentioned before, was that the production trained students were asked to exaggerate word stress. Beach, Brunham, & Kitamura (2001) found that learners that exaggerated sounds when pronouncing some words better perceived those words when performing listening tasks. Explicit articulatory training might have helped the production-trained group to develop a sensitivity to their own productions and to other people's productions.

The perception trained group only improved in perception accuracy in the isolated word condition, but failed to improve in the embedded sentences condition. Perhaps they did not have enough time to perceive all the details involved in word stress, i.e., pitch, loudness, and length (Celce-Murcia et. al., 1996), well enough in order to recognize them when the words were presented in a different environment. With the lack of knowledge of these smaller units (bottom-up skills), they might have used other strategies to do the test. They might have resorted to inferencing, which is a top-down processing skill (Morley, 2001; Rost, 2002). The fact that they did not experiment in producing the words and exaggerating the stress (Beach, Brunham, & Kitamura, 2001) may have put them at a disadvantage in relation to the production-trained group. Training involved only words, and the production-trained group was able to generalize the rules of stress to situations

when these words were within a sentence environment. Perhaps the perception-trained group would need more training sessions to develop this sensitivity and awareness.

In conclusion, production training of high-intermediate EFL students involving repetition of words emphasizing their primary stress helped these students to better perceive primary word stress in words in isolation and words embedded in sentences, proving that production can precede perception, and therefore training in production for this level is more effective and less time consuming than training in perception.

Question 3: What is the relationship between learners' perception and production?

The relationship between learners' perception and production was the third question guiding this study. Training the students in production of primary word stress helped them to more accurately produce and perceive primary word stress, and their perception and production skills were more aligned after training. The production trained group demonstrated a better ability in generalizing the rules learned in the training sessions by producing and perceiving words in isolation to situations when the words were presented in sentences.

Perceptual training of primary word stress helped students to some degree, but their perception and production skills were not aligned. In fact, their overall production scores surpassed their overall perception scores, proving that they could produce what they could not yet perceive, a phenomenon that other studies had already observed (Goto, 1971; Beach, Brunham, & Kitamura, 2001; Sheldon & Strange, 1982; Underbakke, 1993). The control group did not improve in either skills, which proves that training had an effect in both perception and production trained groups.

Production training of primary word stress helped improve perception and production accuracy more than perception training, because such training may provide a link between perception and production, helping both skills to “align” and making this connection stronger. The success of production training may also relate to the Output Hypothesis (Swain, 1993, 1995) in that learners must produce forms in order to notice how their productions differ from native speakers’ and how to correct them. Such noticing may trigger learners’ cognitive processes and help them learn something new or consolidate something they have already learned. Learners that can produce language structures as accurately as they can perceive them, are probably going to be more successful.

The implications of these findings are far reaching, both theoretically and pedagogically. The connection between perception and production may depend on how the L2 is learned, and this may indicate why some studies have found a strong link between perception and production (e.g., Akahane-Yamada et al., 1996; Flege et al., 1997; Hirata, 2000; Rochet, 1995; Wode 1996) while others have not (e.g., Diehl & Kluender, 1989; Diehl, Lotto & Holt, 2004; Stevens and Blumstein, 1981).

Pedagogical Implications

Segmentals

This study confirms what many authors (e.g.: Avery & Ehrlich, 1992; Celce-Murcia, Brinton & Goodwin, 1996; Morley, 1991, 1994) have suggested, that teachers should devote some time in class to train students in pronouncing words and sentences (suprasegmentals), not only because they will have increased intelligibility, but also because training in pronunciation, especially suprasegmentals, improves their perceptual

accuracy by providing L2 learners with listening bottom-up skills. Morley (2001), Peterson (2001), and Rost (1990, 2002) described the need for listening training in the classroom that balances both top-down and bottom-up processing. Listening is one of the skills that are most required of L2 learners, and the one that students find the most challenging (Morley, 2001). Helping them with strategies to cope with this skill is our mission.

Pronunciation Need Not Be Time Consuming

Pronunciation practice in class cannot be ignored. Besides all the benefits for L2 learners' intelligibility, the findings from this study show that by neglecting pronunciation practice teachers are denying their students a chance to significantly improve their perceptual skills in shorter time. The control group in this study actually got worse results in the posttest, proving that the treatment was effective for the trained groups. The claim that pronunciation takes up too much time and show very little results does not hold true in view of our experiment. With just eight short sessions the production trained group made significant gains. So perhaps one change teachers and course planners might have to do is to reformulate how pronunciation training is designed. Production training improves perception (as well as self-perception) and production, and does so with greater gains than perception training. Results from this study support the findings of other studies (e.g., Beach, Brunham, & Kitamura, 2001) that exaggerating the pronunciation of certain structures helps L2 learners to both produce and perceive these structures. This technique certainly helped the production trained group increase their production and perception accuracy.

Many pronunciation books come with CDs and cassettes and involve listening to a list of words and select the correct answer between two or more choices. This kind of exercise can be also found on the Internet and it has its merits, but more emphasis should be given to pronunciation drills where students are required to repeat words exaggerating primary word stress in order to achieve greater gains in both production and perception in shorter time. Teachers and course developers might consider focusing more on production exercises when planning pronunciation practice.

Primary Word Stress Rules

Kreidler's stress trees are an effective way of teaching stress, because students do not feel overwhelmed with the quantity of rules governing word stress in English. Even though those trees do not cover all the cases of primary word stress, it accounts for most of the words students will encounter. Exceptions can be dealt with as they occur in classroom situations, but students and teachers alike will find that most words follow a specific pattern. Most of the pronunciation books suggest rules for nouns and verbs, but rules for adjectives are somewhat neglected. By drawing attention to the fact that most adjectives follow the rules for nouns and verbs and which ones do so, Kreidler makes it possible for L2 learners to see some patterns and therefore identify primary word stress more easily.

One of the initial difficulties of working with Kreidler's trees is that students have to know what tense and lax vowels are. Students might even want to use a dictionary in order to check whether the ult syllable has a lax or tense vowel, and dictionaries bring word stress. The purpose of the training is to make them aware of rules, even if they check with a dictionary to determine where the stress is placed, they have to think why

that syllable is stressed. It is important to note that Kreidler made these trees for American English. British English does not always follow the rules as described in his decision trees. An analysis of the trees and the stress patterns in British English should be done to see whether they can be adapted to that context.

Limitations

This study was limited to three intact groups of level four (high-intermediate) ESL students at the ELC, with a total of 42 subjects. As with most studies, a larger sample size would have been ideal, but despite that, the results show statistical significance. In addition, while this study shows the influence of production training on high-intermediate students, these results cannot be generalized across levels. Research has shown that the level of instruction does influence the way in which perception and production influence each other, and that intermediate and high-intermediate L2 students are able to produce structures they cannot perceive, whereas beginners have to rely more on perception, seeing they are not able to produce the L2 yet (Baker & Trofimovich, 2006; Cardoso, in press; Rochet, 1995).

Another limitation of this study was the time of training. It is possible that a longer training time may have led to different results: for example, the perception trained group might have made more significant gains. However, even with eight training sessions participants (at least those in the production trained group) improved in both production and perception of words and words in sentences, thus indicating that this amount of training can lead to significant improvement.

Another limitation of this study was that the production tokens recorded by the students were analyzed by only one rater, due to the difficulty of finding another native

speaker of American English trained in phonetics. A second rater, one who could verify the accuracy of the first, would have given more credence to the results of the production task.

One could argue that students memorized the words during the training sessions and therefore their performance in the posttest was better if compared to the control group. However, only 10 of the 80 words from the pre and posttests were used in the training. Students had to rely on the rules they learned so as to try to perceive or produce the words more accurately, which suggests that they had to generalize the rules to the other 70 words in the posttest. In fact, a cursory examination of the results from the three groups suggested that the groups did equally well on the trained and untrained words.

This study was conducted with ESL students, the results may not be generalized to EFL students. ESL students are more exposed to native speakers' input and exposure to the target language could have affected the results. Besides, ESL students need to produce the L2 well in order to succeed in their social interactions. It might be that in order to obtain the same significance with EFL students more training sessions would be necessary, since these students do not usually have a chance to speak in the L2 much.

Suggestions for Further Research

As discussed in the limitations session, having more training sessions might have shown if perceptual training would have yielded more significant results over time. It would especially be interesting to replicate this study with EFL students maintaining eight training sessions, and replicating the study with another set of EFL students with increased number of training sessions to see how different or similar the results would be if compared to the results this study obtained for ESL students.

Another interesting aspect that could not be done in this study would be to observe the effect of training across levels. Studies have shown that beginning L2 learners have different learning strategies and needs (Baker & Trofimovich, 2006; Cardoso, in press; Rochet, 1995). If the study were replicated with beginning or advanced students, would the production-trained group have improved more than the perception-trained group?

Perception trained students listened to their teacher repeat the words. A future study could include varied stimuli to see what effects that has on the results. The tokens used in perceptual training could be recorded by different native speakers of American English and the results could be analyzed.

Because this study focused on primary word stress, production tests were rated by a native speaker of American English. In order to further study how intelligibility improved after training sessions, a future study could have native speakers naïve to the experiment rate subjects on degrees of accentedness.

The effect of training EFL and ESL on more frequent words versus less frequent words could be measured and comparisons between these two different groups made. ESL students are exposed to more frequent words, therefore they should be “easier to learn,” whereas less frequent words could be new learning material. What ESL may consider “easy” could be different for EFL students, who are used to more academic vocabulary at more advanced levels.

The current study was done on suprasegmentals. A study adopting the same procedure could be done with segmentals, training a group in perception and training a group in production, including explicit production of the target structures by exaggerating

them, and its effects on production and perception evaluated. It is known that segmentals take more time to learn, so more training sessions should be planned for this type of study.

Finally, studies using computer assisted language learning (CALL) programs with voice recognition devices and immediate feedback on students' production performance and its effects on production and perception as compared to in-class training governed by rules could be designed to compare which treatment is more effective. One advantage of using CALL may be that students might use such programs to complement what is done in class, or to work on individual problems.

Conclusion

This study has shown how perception and production training in primary word stress influenced perception and production skills of the same structures for high-intermediate ESL students. Production training yielded greater gains in perception and production skills and helped these two skills be more aligned, thus proving to be more effective and benefitting more L2 learners. The findings of this study may be significant to perception and production researchers and contribute to a better understanding of how these processes influence each other. These results may also help teachers and course planners to make decisions on the kinds of activities and teaching techniques to use when trying to help learners with production and perception.

With the advent of the communicative approach, classroom practices adopted by former approaches (i.e. grammar translation, audiolingual approach) were regarded as obsolete or even wrong (Morley, 1991). Especially when the repetition of words and structures (i.e. drilling) is concerned, there was an abandonment of this practice because

it is not in accordance with the communicative approach principles. Drilling has been recently seen as not including worthwhile communication. The present study has shown that perceptual training alone does not guarantee that learners will produce or perceive the target language as expected. Giving students the opportunity of producing these structures, even by drilling, has proven to be beneficial.

Now in this post-communicative era, perhaps it is time to re-assess some of the practices proposed by the communicative approach and recognize the virtues of some of the practices from former approaches in order to better serve ESL and EFL students.

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APPENDIX A

Perception Pretest

Name: _____ Level: _____ time: _____ Age: _____

Nationality: _____ How long have you studied English? _____

How long have you been in the US? _____

Part I

You will hear 20 words, pronounced in two different ways each. For each word, decide which pronunciation is correct: the first one (alternative “a”) or the second one (alternative “b”).

Circle the letter corresponding to the correct version of the word. You will hear each pair twice.

e.g.: a b **or** a b

- | | | | | | | | |
|-----|------------|---|---|-----|--------------|---|---|
| 1. | expert | a | b | 11. | contact | a | b |
| 2. | integral | a | b | 12. | discrete | a | b |
| 3. | contribute | a | b | 13. | indicate | a | b |
| 4. | relevant | a | b | 14. | protocol | a | b |
| 5. | injure | a | b | 15. | sequence | a | b |
| 6. | analyze | a | b | 16. | decade | a | b |
| 7. | debate | a | b | 17. | concentrate | a | b |
| 8. | regime | a | b | 18. | potential | a | b |
| 9. | consent | a | b | 19. | conflict (n) | a | b |
| 10. | mediate | a | b | 20. | interval | a | b |

Part II

You will hear 20 sentences. For each sentence, mark **all** the stressed syllables, with a dot on top of the stressed syllable. E.g.: **J**ohn is a **d**octor. You will hear each sentence twice.

1. We have a lot more ideas to generate.
2. I wanted to acquire a new car.
3. His boss thanked him for that valuable insight.
4. The damage became too large to estimate.
5. We did it for the youngest child's benefit.
6. His greatest attribute is his ability to work under pressure.
7. Who knows how much this will impact him?
8. He was waiting for that to occur.
9. He let her work on his recent project.
10. Yesterday the secretary was terminated.
11. This sentence is the ultimate one.
12. She told them she had several interested colleagues.
13. The difference is apparent.
14. The manager gave her the manuscript to edit.
15. These are the new criteria.
16. That's a different notion.
17. He learned a new technique.
18. He was waiting for his transfer to arrive.
19. She works in an office adjacent to mine.
20. Write your name in the register.

APPENDIX B

Perception Posttest

Please complete this information:

Name: _____ LS 4 - teacher: _____ time: _____ Age: _____

Nationality: _____ How long have you studied English? _____

How long have you been in the US? _____

Part I

You will hear 20 words, pronounced in two different ways each. For each word, decide which pronunciation is correct: the first one (alternative “a”) or the second one (alternative “b”).

Circle the letter corresponding to the correct version of the word. You will hear each pair twice.

e.g.: a b **or** a b

- | | | | | | | | |
|-----|------------|---|---|-----|--------------|---|---|
| 21. | integral | a | b | 31. | contact | a | b |
| 22. | injure | a | b | 32. | indicate | a | b |
| 23. | expert | a | b | 33. | decade | a | b |
| 24. | debate | a | b | 34. | concentrate | a | b |
| 25. | regime | a | b | 35. | conflict (n) | a | b |
| 26. | consent | a | b | 36. | interval | a | b |
| 27. | mediate | a | b | 37. | relevant | a | b |
| 28. | potential | a | b | 38. | sequence | a | b |
| 29. | contribute | a | b | 39. | analyze | a | b |
| 30. | discrete | a | b | 40. | protocol | a | b |

Part II

You will hear 20 sentences. For each sentence, mark **all** the stressed syllables, with a dot on top of the stressed syllable. E.g.: John is a doctor. You will hear each sentence twice.

21. This sentence is the ultimate one.
22. I wanted to acquire a new car.
23. The manager gave her the manuscript to edit.
24. The damage became too large to estimate.
25. We did it for the youngest child's benefit.
26. His boss thanked him for that valuable insight.
27. Who knows how much this will impact him?
28. His greatest attribute is his ability to work under pressure.
29. He was waiting for that to occur.
30. She told them she had several interested colleagues.
31. The difference is apparent.
32. Write your name in the register.
33. These are the new criteria.
34. That's a different notion.
35. Yesterday the secretary was terminated.
36. He let her work on his recent project.
37. He learned a new technique.
38. We have a lot more ideas to generate.
39. He was waiting for his transfer to arrive.
40. She works in an office adjacent to mine.

APPENDIX C

Production Pretest

PART I

Please record each of these words **twice**, leaving a short pause between repetitions.

↓ injure commence sequence constant construct (verb)	↓ internal maintain integral decade purchase	↓ illustrate input protocol subsequent mediate	↓ converse definite regime contribute volume
---	---	---	---

PART II

Please record each of the following sentences **twice**, leaving a short pause between repetitions.

Think about the problem from every aspect. This concept is hard to understand. That was taken out of context. Income taxes are due by April 15. The key to success is diligence. The dress needs to be altered. He was criticized for his conduct. This new LCD TV has great contrast. Your house can finance your retirement. The book was full of interesting insights into human relationships.	The changes to the plan will be implemented next month. Their tastes are very similar. They have new criteria to select candidates. Please try to be more specific. He was given the article to edit. The information they gave me is not accurate. A new policy will be issued. Mutual respect is necessary in any relationship. This new development will generate more jobs . That was a little difficult to specify.
---	---

APPENDIX D

Production Posttest

Record both parts 1 and 2 in a single file. Do not press “stop” before finishing the whole test. If you want to take a breath, press “Pause.” When saving your file, choose the option “export as mp3.” Please name your file as follows: “surname-teacher-time.” E.g.: liu-romanini930.mp3 (Do not use a dot [.] to separate your name from your teacher’s name. To save your file, go to “Students folders > Romanini > experiment.”

PART I

Please record each of these words **twice**, leaving a short pause between repetitions.

↓ sequence decade volume purchase commence	↓ internal maintain integral protocol constant	↓ illustrate input subsequent mediate contribute	↓ converse definite regime injure construct (verb)
---	---	---	---

PART II

Please record each of the following sentences **twice**, leaving a short pause between repetitions.

The information they gave me is not accurate.	The changes to the plan will be implemented next month.
That was taken out of context.	They have new criteria to select candidates.
The key to success is diligence.	Think about the problem from every aspect.
The dress needs to be altered.	He was given the article to edit.
He was criticized for his conduct.	Income taxes are due by April 15.
Your house can finance your retirement.	A new policy will be issued.
The book was full of interesting insights into human relationships.	This new development will generate more jobs.
This concept is hard to understand.	Mutual respect is necessary in any relationship.
Their tastes are very similar.	This new LCD TV has great contrast.
That was a little difficult to specify.	Please try to be more specific.

Thank you so much for participating in this project.

- 5) The first thing we have to do is look at the last syllable. We have to know whether or not it's "stressable." The ult is stressable if it contains a tense (also called "free") vowel or a VCC ending. Notice that the VCC is really a vowel sound followed by two consonant sounds, so the "sh" spelling, for instance, is actually only one sound.
- 6) Give the students a chart with the tense vowels:

9 TENSE / FREE VOWELS:			
	FRONT	BACK	
HIGH	tree /i:/	brew /u:/	
MID	day /ei/	toe /ou/	
LOW	spa /a:/	law /ɔ:/	
	tie /ai/	toy /oi/	now /au/

(Go over the sounds, by reading the words to them. They can also look these words up in their electronic dictionaries and see what symbol they have for these vowels).

- 7) Let's look at an example. The verb "solicit" – how many syllables does it have?
(⇒ two)

Look at the last syllable so|li|cit

Is the ult stressable?

(⇒ No, the ult has a lax vowel /i/)

So look at the diagram. If the ult is not stressable, which syllable is stressed?

(⇒ the penult is stressed.)

So we pronounce it "solicit" (say it twice, emphasizing the stressed syllable).

Write "erupt" on the board.

Is the ult stressable? (⇒ yes: VCC)

How many syllables? (⇒ two: so we stress the ult: **erupt**) (say it twice, emphasizing the stressed syllable).

Write "contain" on the board.

Is the ult stressable? (⇒ yes: V: /ei/)

How many syllables? (⇒ two: so we stress the ult: **contain**) (say it twice, emphasizing the stressed syllable).

Write "exaggerate" on the board.

Is the ult stressable? (⇒ yes: V: /ei/)

How many syllables? (⇒ four: so we stress the antepenult: **exaggerate**) (say it twice, emphasizing the stressed syllable).

Write "supplement" on the board.

Is the ult stressable? (⇒ yes: VCC ent)

How many syllables? (⇒ three: so we stress the antepenult: **sup**plement) (say it twice, emphasizing the stressed syllable).

8) TRAINING ONE

Give handout to students. Try to do the same with these words: (let students try to apply the rule)

adopt	furnish
answer	inhabit
dehumidify	mechanize
exhaust	offend
exonerate	transcribe

The teacher says each word twice, emphasizing the stressed syllable, and the students check whether they marked the correct stressed syllable. The teacher shows a transparency with the words and the stressed syllables clearly marked:

<u>ad</u>opt	<u>fu</u>rnish
<u>an</u>swer	<u>in</u>habit
dehu <u>mi</u> di fy	<u>me</u>chanize
ex <u>ha</u>ust	<u>off</u>end
<u>ex</u>onerate	trans <u>cri</u>be

Answer:

a <u>do</u>pt	ult – VCC / two syllables – ult is stressed
<u>an</u>swer	ult is not V: or VCC – penult is stressed
de hu <u>mi</u> di fy	ult – /ai/ V: / more than two syllables – antepenult is stressed
ex <u>ha</u>ust	ult – /o:/ as in “law” - VCC / two syllables – ult is stressed
e <u>xo</u> ne rate	ult – /ei/ - V: / more than two syllables – antepenult is stressed
<u>fu</u>r nish	ult is not V: or VCC(ish is a lax vowel followed by one consonant sound) – penult is stressed
in <u>ha</u> bit	ult is not V: or VCC – penult is stressed
<u>me</u> cha nize	ult – /ai/ V: / more than two syllables – antepenult is stressed
o <u>ff</u>end	ult – VCC / two syllables – ult is stressed
trans <u>cri</u>be	ult – /ai/ V: / two syllables – ult is stressed

9) TRAINING TWO: Give the handout to the students and ask them to mark the stress by using the decision tree. Check by reading each word twice and showing the stress on the board.

ensure	<u>in</u>dicare
<u>ed</u>it	<u>ge</u>nerate
<u>spe</u>cify	<u>con</u>tribute
<u>fi</u>nance	de <u>ve</u>lop
<u>imp</u>act	<u>per</u>secute

- 5) The first thing we have to do is look at the last syllable. We have to know whether or not it's "stressable." The ult is stressable if it contains a tense (also called "free") vowel or a VCC ending. Notice that the VCC is really a vowel sound followed by two consonant sounds, so the "sh" spelling, for instance, is actually only one sound.
- 6) Give the students a chart with the tense vowels:

9 TENSE / FREE VOWELS:			
	FRONT	BACK	
HIGH	tree /i:/	brew /u:/	
MID	day /ei/	toe /ou/	
LOW	spa /a:/	law /ɔ:/	
	tie /ai/	toy /oi/	now /au/

(Go over the sounds, by reading the words to them. They can also look these words up in their electronic dictionaries and see what symbol they have for these vowels).

- 7) Let's look at an example. The verb "solicit" – how many syllables does it have?
(⇒ two)

Look at the last syllable so|li|cit Is the ult stressable?

(⇒ No, the ult has a lax vowel /i/)

So look at the diagram. If the ult is not stressable, which syllable is stressed?

(⇒ the penult is stressed.)

So we pronounce it "solicit" (HAVE THE STUDENTS REPEAT IT TWICE)

Write "erupt" on the board.

Is the ult stressable? (⇒ yes: VCC)

How many syllables? (⇒ two: so we stress the ult: **erupt**) (STUDENTS REPEAT TWICE)

Write "contain" on the board.

Is the ult stressable? (⇒ yes: V: /ei/)

How many syllables? (⇒ two: so we stress the ult: **contain**) (STUDENTS REPEAT TWICE)

Write "exaggerate" on the board.

Is the ult stressable? (⇒ yes: V: /ei/)

How many syllables? (⇒ four: so we stress the antepenult: **exaggerate**) (STUDENTS REPEAT TWICE)

Write "supplement" on the board.

Is the ult stressable? (⇒ yes: VCC ent)

How many syllables? (⇒ three: so we stress the antepenult: **supplement**) (STUDENTS REPEAT TWICE)

8) TRAINING ONE

Give handout to students. Try to do the same with these words: (let students try to apply the rule).

adopt	furnish
answer	inhabit
dehumidify	mechanize
exhaust	offend
exonerate	transcribe

The teacher then shows a transparency with the words and the stressed syllables clearly marked:

<u>adopt</u>	<u>fu</u>rnish
<u>an</u>swer	<u>in</u>habit
dehu <u>mi</u> dify	<u>me</u>chanize
ex <u>hau</u> st	<u>off</u>end
<u>ex</u>onerate	trans <u>cri</u> b

The teacher asks students to repeat each word twice, exaggerating the stress. Teacher points to stressed syllable and corrects the students as necessary.

Answer:

a <u>do</u> pt	ult – VCC / two syllables – ult is stressed
<u>an</u> swer	ult is not V: or VCC – penult is stressed
de hu <u>mi</u> di fy	ult – /ai/ V: / more than two syllables – antepenult is stressed
ex <u>hau</u> st	ult – /o:/ as in “law” - VCC / two syllables – ult is stressed
e <u>xo</u> ne rate	ult – /ei/ - V: / more than two syllables – antepenult is stressed
<u>fu</u> rish	ult is not V: or VCC(ish is a lax vowel followed by one consonant sound) – penult is stressed
in <u>ha</u> bit	ult is not V: or VCC – penult is stressed
<u>me</u> cha nize	ult – /ai/ V: / more than two syllables – antepenult is stressed
o <u>ff</u> end	ult – VCC / two syllables – ult is stressed
trans <u>cri</u> b	ult – /ai/ V: / two syllables – ult is stressed

9) TRAINING TWO: Give the handout to the students and ask them to mark the stress. Ask students to repeat each word three times. Model and correct as necessary.

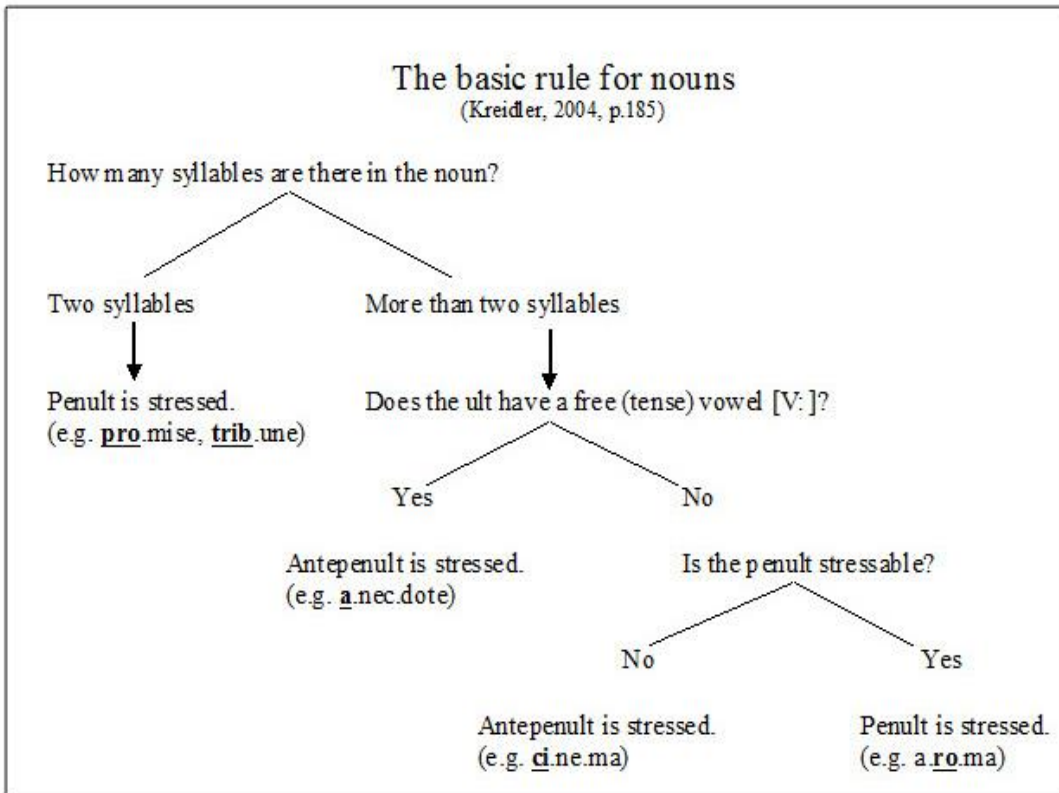
ensure	<u>in</u> dicate
<u>ed</u> it	<u>ge</u> nerate
<u>sp</u> ecify	<u>co</u> ntribute
<u>fi</u> nance	de <u>ve</u> lop
im <u>pa</u> ct	<u>pe</u> rsecute

APPENDIX G

Perception Training with Nouns

PERCEPTION TRAINING WITH NOUNS
DAY ONE

1) Give students the following handout:



The first question to ask about verbs when determining the position of stress is: ‘Is the ult stressable or not?’ Nouns are different. The first question to ask about a noun is: ‘How many syllables does the noun have?’ The next question is: ‘Does the ult have a free vowel or not?’ It doesn’t matter how many consonants occur in final position. Examine these sets of nouns.

2) Go over the rules, using the example words with the students. Write the word ‘promise’ on the board. Ask “How many syllables are there in this noun?” (⇒ two). Then, the penult is stressed. Do the same with other words.

3) Training with nouns – 1. Give this handout to students:

insight	ticket
project	sequence
satellite	closet
focus	horizon
institute	proportion

Ask students to try and apply the rules for nouns on these words.

- 4) Say each word twice, emphasizing the stressed syllable, and ask students to mark the stress (they should be checking it, if they did the exercise).
- 5) Show a transparency with the stress clearly marked. Say each word once again.

<u>i</u>n sight	<u>t</u>i cket
<u>p</u>r oject	<u>s</u>e quence
<u>s</u>a tellite	<u>c</u>l o <u>s</u>e t
<u>f</u>o cus	<u>h</u>o rizon
<u>i</u>n stitute	<u>p</u>r o <u>o</u> rtion

insight – two syllables – penult is stressed

project – two syllables – penult is stressed

satellite – more than 2 syll – ult has a free/tense vowel [ai] – antepenult is stressed

focus - two syllables – penult is stressed

institute - more than 2 syll – ult has a free/tense vowel [u:] – antepenult is stressed

ticket - two syllables – penult is stressed

sequence - two syllables – penult is stressed

clo**se**t - two syllables – penult is stressed

horizon – more than two syll – ult is not free – penult is stressable [ai] – penult is stressed

pro**o**rtion - more than two syll – ult is not free – penult is stressable [o:] – penult is stressed

DAY TWO

- 6) Training with nouns

Give this handout to students. Ask them to try and mark the stress by applying the rules.

<u>a</u> ppetite	<u>d</u> ecade
<u>t</u> abloid	<u>i</u> nput
<u>v</u> eteran	<u>d</u> iploma
<u>p</u> rotocol	<u>o</u> pera
<u>h</u> ypothesis	<u>c</u> amera

- 7) Say each word twice, emphasizing the stress, and ask students to mark the stress (they should be checking it, if they did the exercise).

Show a transparency with the stress clearly marked.

appetite – more than 2 syll – ult has a tense vowel [ai] – antepenult is stressed

tabloid – two syll – penult is stressed

veteran – more than 2 syll – ult doesn't have a tense vowel – penult is not stressable – antepenult is stressed

protocol - more than 2 syll – ult has a tense vowel - similar to [o:] in AmE – antepenult is stressed

hypothesis - more than 2 syll – ult doesn't have a tense vowel – penult is not stressable – antepenult is stressed

decade – two syll – penult is stressed

input - two syll – penult is stressed

diploma – more than 2 syll – ult not free – penult is stressable [ou]- penult is stressed.

opera – two syllables – penult stressed // 3 syll + ult not free + penult not stressable – antepenult is stressed

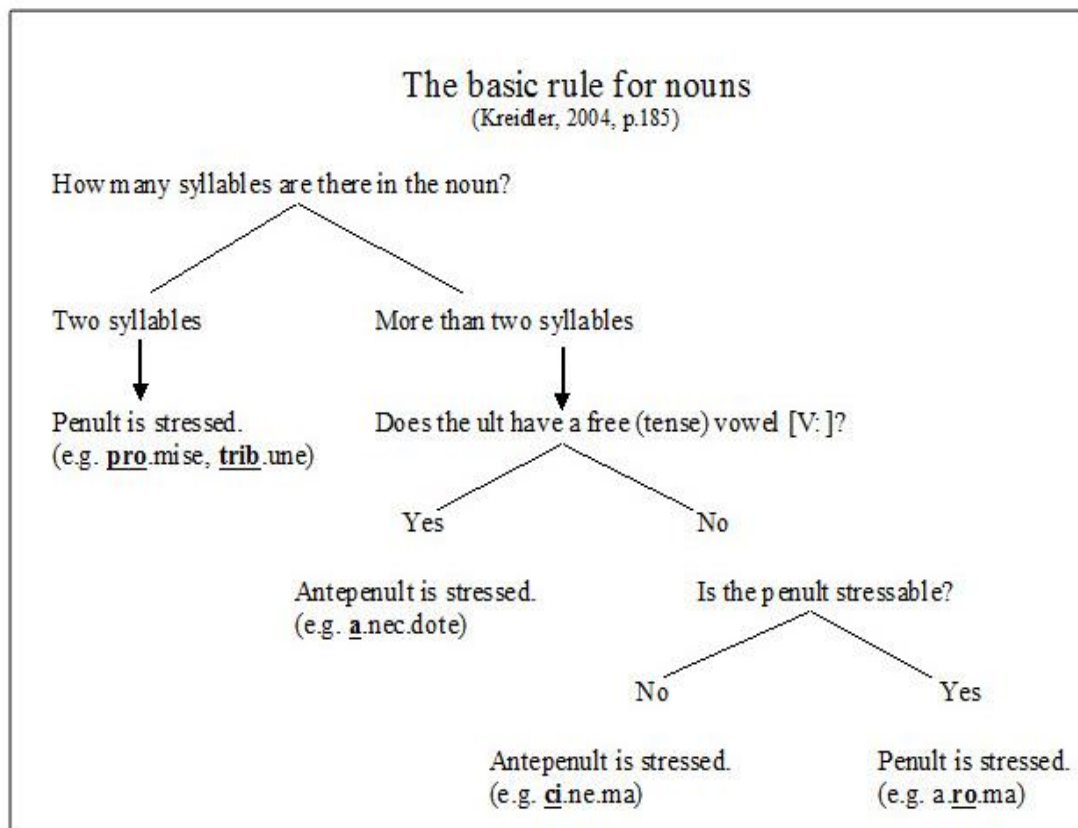
camera - more than 2 syll – ult doesn't have a tense vowel – penult is not stressable – antepenult is stressed

APPENDIX H

Production Training with Nouns

PRODUCTION TRAINING WITH NOUNS
DAY ONE

- 1) Give students the following handout:



The first question to ask about verbs when determining the position of stress is: ‘Is the ult stressable or not?’ Nouns are different. The first question to ask about a noun is: ‘How many syllables does the noun have?’ The next question is: ‘Does the ult have a free vowel or not?’ It doesn’t matter how many consonants occur in final position. Examine these sets of nouns.

- 2) Go over the rules, using the example words with the students. Write the word ‘promise’ on the board. Ask “How many syllables are there in this noun?” (⇒ two). Then, the penult is stressed. Do the same with other words.
- 3) Training with nouns – 1. Give this handout to students:

insight	ticket
project	sequence
satellite	closet
focus	horizon
institute	proportion

Ask students to try and apply the rules for nouns on these words.

- 4) Show a transparency with the stress clearly marked. Ask students to repeat each word twice, exaggerating the stressed syllable.

<u>i</u>nsight	<u>t</u>icket
<u>p</u>roject	<u>s</u>equence
<u>s</u>atellite	<u>c</u>loset
<u>f</u>ocus	h<u>o</u>ri<u>z</u>on
<u>i</u>nstitute	pro<u>p</u>o<u>r</u>tion

insight – two syllables – penult is stressed

project – two syllables – penult is stressed

satellite – more than 2 syll – ult has a free/tense vowel [ai] – antepenult is stressed

focus - two syllables – penult is stressed

institute - more than 2 syll – ult has a free/tense vowel [u:] – antepenult is stressed

ticket - two syllables – penult is stressed

sequence - two syllables – penult is stressed

closet - two syllables – penult is stressed

horizon – more than two syll – ult is not free – penult is stressable [ai] – penult is stressed

proportion - more than two syll – ult is not free – penult is stressable [o:] – penult is stressed

DAY TWO

- 5) Training with nouns – 2

Give this handout to students. Ask them to try and mark the stress by applying the rules.

<u>a</u>ppetite	<u>d</u>ecade
<u>t</u>abloid	<u>i</u>nput
<u>v</u>eteran	<u>d</u>ipl<u>o</u>ma
<u>p</u>rotocol	<u>o</u>pera
h<u>y</u>po<u>t</u>hesis	<u>c</u>amera

- 6) Show a transparency with the stress clearly marked. Ask students to repeat each word twice, exaggerating the stressed syllable.

appetite – more than 2 syll – ult has a tense vowel [ai] – antepenult is stressed

tabloid – two syll – penult is stressed

veteran – more than 2 syll – ult doesn't have a tense vowel – penult is not stressable – antepenult is stressed

protocol - more than 2 syll – ult has a tense vowel - similar to [o:] in AmE – antepenult is stressed

hypothesis - more than 2 syll – ult doesn't have a tense vowel – penult is not stressable – antepenult is stressed

decade – two syll – penult is stressed

input - two syll – penult is stressed

diploma – more than 2 syll – ult not free – penult is stressable [ou]- penult is stressed.

opera – two syllables – penult stressed // 3 syll + ult not free + penult not stressable – antepenult is stressed

camera - more than 2 syll – ult doesn't have a tense vowel – penult is not stressable – antepenult is stressed

APPENDIX I

Perception Training with Adjectives

DAY ONE - 1. Give students the following handout:

Type 1 – follow the rules for verbs

Group 1 – ult stressed	Group 2 – antepenult stressed	Group 3 – penult stressed
con• <u>trite</u> i• <u>nane</u> ob• <u>scene</u> se• <u>rene</u> (ult stressable: free vowel)	<u>a</u> sinine <u>b</u> ellicose <u>e</u> rudite <u>g</u> randiose (ult stressable: free vowel)	acad <u>e</u> m <u>i</u> c de <u>c</u> re <u>p</u> it int <u>r</u> epid peri <u>d</u> ic
ab• <u>surd</u> co• <u>r</u> rect di• <u>s</u> tinct (ult stressable: consonant cluster)	<u>d</u> ifficult <u>m</u> anifest <u>m</u> oribund (ult stressable: consonant cluster)	Unstressable ult: - ic - id - it

2. Say each word twice, emphasizing the stressed syllable, and ask students to note the stressed syllable.

DAY TWO – Give the students this handout:

1. Mark the stress for the following Type 1 adjectives:

sincere	idiotic
democratic	ancient
different	complete
obsolete	insane
aboard	atomic

Answer key:

sincere – group 1, V:	idiotic – group 3, -ic
democratic – group 3, -ic	ancient – group 2, VCC
different – group 2, VCC	complete – group 1, V:
obsolete – group 2, V:	insane – group 1, V:
aboard – group 1, V:	atomic – group 3, VCC

2. Say each word twice, emphasizing the stressed syllable, and ask students to note the stressed syllable.

DAY THREE – Give the students this handout:

Type 2 – follow the rules for nouns

Type 2 adjectives end with one of these suffixes: **+al, +ar, +ant/ent, or +ous**.

Note that these suffixes are all monosyllabic, do not have a free vowel, and the vowel is initial in the suffix. We refer to these as **weak suffixes**.

In adjectives with these suffixes either the penult or the antepenult is stressed, depending on the nature of the penult. The following exercise will help you determine the general rule.

Exercise with adjectives - Mark the stress in each of these words:

fatal global polar stellar cogent decent dormant nervous

General statement: If an adjective has a weak suffix preceded by a base of just one syllable, stress is on the _____ .

2. Ask students to do the exercise. Then write each word (one at a time) on the board, say it twice, and indicate the stressed syllable, so the students can check their work.

Answer:

fatal global polar stellar cogent decent dormant nervous

3. Help the students complete the general statement.

General statement: If an adjective has a weak suffix preceded by a base of just one syllable, stress is on the **base**. → normal

4. Prepare students for the next exercise. Go over the example with them. Write the words “complacent,” “abundant,” “reluctant,” and “adamant” on the board. Go over each of the following rules:

(b) Each of the words below has a base of more than one syllable. Do three things:

1. If the vowel of the penult is a free vowel, put a macron over the vowel letter, e.g. complācent; /ei/
2. If the vowel of the penult is followed by two consonants (a consonant cluster which cannot occur in word-initial position), draw a line between the two consonant letters, e.g. abun|dant; [nd]
3. Use the tick to show whether the penult or the antepenult is stressed, e.g. com'placent, re'luctant, 'adamant.

ac ci den tal	re luc tant	pe ri phe ral
e ter nal	mag ni fi cent	a na lo gous
vi gi lant	bar ba rous	a bun dant
ma lig nant	ge ne rous	a nec do tal

5. Give students some times to do the exercise. Correct by writing the words on the board (one at a time), follow the procedure indicated in the exercise, then repeat each word twice, emphasizing the stressed syllable, so the students can hear the stressed syllable.

Answers

ac ci 'den tal	re 'luc tant	pe 'ri phe ral
e 'ter nal	mag 'ni fi cent	a 'na lo gous
'vi gi lant	bar 'bā rous	a 'bun dant
ma 'lig nant	'ge ne rous	a nec 'dō tal

We note that the penult is stressed if it meets either of these conditions:

(1) If the vowel of the penult is a free vowel.

(2) If the vowel of the penult is followed by two consonants (a consonant cluster which cannot occur in word-initial position)

If the penult meets neither of these conditions, the antepenult is stressed.

Adjectives of this type are just like nouns which have a checked vowel in the ult. In fact, the weak suffix +ant/ent appears in nouns as well as adjectives; compare detergent, occupant, participant.

DAY FOUR – Give the students this handout:

Mark the stress for the following Type 2 adjectives:

penitent	unusual
curious	clamant
natal	frivolous
chemical	instant
delicious	technological

Answer key:

penitent – no V: nor consonant cluster – antep. is stressed.

curious

natal – 2 syl.

chemical – no V: nor consonant cluster – antep. is stressed.

delicious – no V: nor consonant cluster – antep. is stressed.

unūsual – penult V:, stressed

clamant -2 syl.

frivolous – no V: nor consonant cluster – antep. is stressed.

instant – 2 syl.

technological – no V: nor consonant cluster – antep. is stressed.

2. Say each word twice, and ask students to note the stressed syllable

APPENDIX J

Production Training with Adjectives

DAY ONE - 1. Give students the following handout:

Type 1 – follow the rules for verbs

Group 1 – ult stressed	Group 2 – antepenult stressed	Group 3 – penult stressed
con• <u>trite</u> i• <u>nane</u> ob• <u>scene</u> se• <u>rene</u> (ult stressable: free vowel)	a <u>sinine</u> be <u>llicose</u> e <u>rudite</u> g <u>randiose</u> (ult stressable: free vowel)	aca <u>de</u> mic de <u>cre</u> pit in <u>tre</u> pid pe <u>ri</u> odic
ab• <u>surd</u> co• <u>rrect</u> di• <u>stinct</u> (ult stressable: consonant cluster)	d <u>ifficult</u> m <u>anifest</u> m <u>oribund</u> (ult stressable: consonant cluster)	Unstressable ult: - ic - id - it

2. Ask students to say each word twice, exaggerating the stressed syllable. Help them with individual sounds when necessary.

DAY TWO – Give the students this handout:

1. Mark the stress for the following Type 1 adjectives:

sincere	idiotic
democratic	ancient
different	complete
obsolete	insane
aboard	atomic

Answer key:

sinc <u>e</u> re – group 1, V:	id <u>i</u> otic – group 3, -ic
democ <u>r</u> atic – group 3, -ic	<u>a</u> ncient – group 2, VCC
<u>d</u> ifferent – group 2, VCC	comple <u>t</u> e – group 1, V:
<u>o</u> bsol <u>e</u> te – group 2, V:	ins <u>a</u> ne – group 1, V:
<u>a</u> bo <u>a</u> rd – group 1, V:	at <u>o</u> mic – group 3, VCC

2. Ask students to say each word twice, exaggerating the stressed syllable. Help them with individual sounds when necessary.

DAY THREE – Give the students this handout:

Type 2 – follow the rules for nouns

Type 2 adjectives end with one of these suffixes: **+al, +ar, +ant/ent, or +ous.**

Note that these suffixes are all monosyllabic, do not have a free vowel, and the vowel is initial in the suffix. We refer to these as **weak suffixes.**

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fatal global polar stellar cogent decent dormant nervous

General statement: If an adjective has a weak suffix preceded by a base of just one syllable, stress is on the _____ .

2. Ask students to do the exercise. Then write each word (one at a time) on the board, and ask students to say it twice, exaggerating the stressed syllable. Help them with individual sounds when necessary.

Answer: **fatal global polar stellar cogent decent dormant nervous**

3. Help the students complete the general statement.

General statement: If an adjective has a weak suffix preceded by a base of just one syllable, stress is on the **base.** → normal

4. Prepare students for the next exercise. Go over the example with them. Write the words “complacent,” “abundant,” “reluctant,” and “adamant” on the board. Go over each of the following rules:

(b) Each of the words below has a base of more than one syllable. Do three things:

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re luc tant

pe ri phe ral

e ter nal	mag ni fi cent	a na lo gous
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ma lig nant	ge ne rous	a nec do tal

5. Give students some times to do the exercise. Correct by writing the words on the board (one at a time), follow the procedure indicated in the exercise, then ask students to repeat each word twice, exaggerating the stressed syllable.

Answers

ac ci 'den tal	re 'luc tant	pe 'ri phe ral
e 'ter nal	mag 'ni fi cent	a 'na lo gous
'vi gi lant	bar 'bā rous	a 'bun dant
ma 'lig nant	'ge ne rous	a nec 'dō tal

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DAY FOUR – Give the students this handout:

1. Mark the stress for the following Type 2 adjectives:

penitent	unusual
curious	clamant
natal	frivolous
chemical	instant
delicious	technological

Answer key:

penitent – no V: nor consonant cluster – antep. is stressed.

curious

natal – 2 syl.

chemical – no V: nor consonant cluster – antep. is stressed.

delicious – no V: nor consonant cluster – antep. is stressed.

unusual – penult V:, stressed

clamant -2 syl.

frivolous – no V: nor consonant cluster – antep. is stressed.

instant – 2 syl.

technological – no V: nor consonant cluster – antep. is stressed.

2. Ask students to say each word twice, exaggerating the stressed syllable. Help them with individual sounds when necessary.